DHC-VZ50MD

SERVICE MANUAL

E Model
Tourist Model

- DHC-VZ50MD is composed of following models.
  As for the service manual, it is issued for each component model, then, please refer to them.

COMPONENT MODEL NAME

	DHC-VZ50MD
COMPACT DISC DECK RECEIVER SYSTEM	HCD-VZ50MD
SPEAKER SYSTEM	SS-VZ50MD

- Abbreviation

SP : Singapore model
JE : Tourist model
MY : Malaysia model

SPECIFICATIONS

General

Power requirements	120 V, 220V, 230-240V AC, 50/60 Hz Adjustable with voltage selector.
Power consumption	180 watts
Dimensions (w/h/d)	Approx. 250 x 375 x 395 mm
Mass	Approx. 12.0 kg

Supplied accessories

AM loop antenna (1)
FM lead antenna (1)
Remote Commander (1)
Batteries (2)
Video cable (1)
Speaker cords (2)
Front speaker pads (8)

Design and specifications are subject to change without notice.

PARTS LIST

Part No.	Description	Remark
	ACCESSORIES & PACKING MATERIALS **********************************	
1-418-910-11	COMMANDER, STANDARD (RM-SV150)	
1-501-374-11	ANTENNA, LOOP (AM)	
1-501-659-71	ANTENNA (FM)	
1-782-981-21	CORD, CONNECTION (AUDIO)	
4-210-254-01	CUSHION (FOOT)	
4-230-516-11	MANUAL INSTRUCTION (ENGLISH)	
4-230-516-21	MANUAL INSTRUCTION (FRENCH, SPANISH)(JE,SP, MY)	
4-230-516-31	MANUAL INSTRUCTION (CHINESE)	
4-983-536-31	COVER, BATTERY (FOR RM-SV150)	

MINI Hi-Fi COMPONENT SYSTEM

SONY®

9-929-528-11

Sony Corporation
Audio Entertainment Group

2000I16050-1D
Printed in Japan ©2000.9
Published by General Engineering Dept.

HCD-VZ50MD

SERVICE MANUAL

E Model
Tourist Model

***Self Diagnosis** Supported model*

HCD-VZ50MD is the tuner, deck, CD, MD and amplifier section in DHC-VZ50MD.

This stereo system is equipped with the Dolby B-type noise reduction system*.

* Manufactured under license from Dolby Laboratories Licensing Corporation.
DOLBY and the double-D symbol ◻◻ are trademarks of Dolby Laboratories Licensing Corporation.

CD SECTION	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM53F-K4BD37
	Base Unit Type	BU-K4BD37
	Optical Pick-up Type	KSM-213DHAP/Z-NP
MD SECTION	Model Name Using Similar Mechanism	HCD-ZX50MD
	MD Mechanism Type	MDM-7B
	Optical Pick-up Type	KMS-260B/J1N
TAPE DECK SECTION	Model Name Using Similar Mechanism	HCD-ZX50MD
	Tape Transport Mechanism Type	TCM-230AWR12

SPECIFICATIONS

Amplifier section

The following measured at 120/220/240 V AC, 50/60 Hz

DIN power output (rated)	115 + 115 watts (6 ohms at 1 kHz, DIN)
Continuous RMS power output (reference)	150 + 150 watts (6 ohms at 1 kHz, 10 % THD)

Inputs

VIDEO (AUDIO) IN: (phono jacks)	voltage 250 mV, impedance 47 kilohms
MIC 1/2: (mini jack)	sensitivity 1 mV, impedance 10 kilohms

Outputs

VIDEO OUT: (phono jack)	max. output level 1 Vp-p, unbalanced, Sync negative, load impedance 75 ohms
S-VIDEO OUT: (4-pin/mini-DIN jack)	Y: 1 Vp-p, unbalanced, Sync negative, C: 0.286 Vp-p, load impedance 75 ohms
PHONES: (stereo mini jack)	accepts headphones of 8 ohms or more
FRONT SPEAKER:	accepts impedance of 6 to 16 ohms
SUPER WOOFER:	Voltage 1 V, impedance 1 kilohms

VIDEO CD/CD player section

System	Compact disc and digital audio system
Laser	Semiconductor laser (λ=780 nm) Emission duration: continuous
Laser output	Max. 44.6 µW* *This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Wavelength	780 – 790 nm
Frequency response	2 Hz – 20 kHz (±0.5 dB)
Signal-to-noise ratio	More than 90 dB
Dynamic range	More than 90 dB
Video color system format	NTSC, PAL

MD deck section

System	MiniDisc digital audio system
Laser	Semiconductor laser (λ=780 nm) Emission duration: continuous
Laser output	Max. 44.6 µW* *This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with a 7 mm aperture.
Sampling frequency	44.1 kHz
Frequency response	20 – 20,000 Hz

Tape player section

Recording system	4-track 2-channel stereo
Frequency response (DOLBY NR OFF)	40 – 13,000 Hz (±3 dB), using Sony TYPE I cassette 40 – 14,000 Hz (±3 dB), using Sony TYPE II cassette

— Continued on next page —

MINI Hi-Fi COMPONENT SYSTEM

SONY®

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	
Tourist model:	76.0 – 108.0 MHz
Other models:	87.5 – 108.0 MHz
Antenna	FM lead antenna
Antenna terminals	75 ohm unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range	531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
Antenna	AM loop antenna
Antenna terminals	External antenna terminal
Intermediate frequency	450 kHz

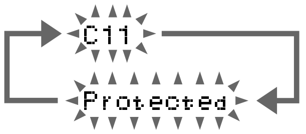
General

Power requirements	120 V, 220 V, 230 – 240 V AC, 50/60 Hz Adjustable with voltage selector
Power consumption	180 watts
Dimensions (w/h/d)	Approx. 250 x 375 x 395 mm
Mass	Approx. 12.0 kg
Supplied accessories:	AM loop antenna (1) FM lead antenna (1) Remote Commander (1) Batteries (2) Video cable (1) Speaker cords (2) Front speaker pads (8)

Design and specifications are subject to change without notice.

Self-diagnosis Display

This system has the Self-diagnosis display function to let you know if there is a system malfunction. The display shows a code made up of three or five letters and a message alternately to show you the problem. To solve the problem, refer to the following list. If any problem persists, consult your nearest Sony dealer.



C11 / Protected

The MD is protected against erasure.

→ Remove the MD and slide the tab to close the slot (page 49).

C12 / Cannot Copy

You are attempting to record a CD with a format that the system does not support, such as CD-ROM.

→ —

C13 / REC Error

Recording is not possible.

→ Move the system to a stable place and start recording over from the beginning.

The MD is dirty or is scratched or the MD does not meet the standards.

→ Change the MD with another one and start recording over from the beginning.

C13 / Read Error

The MD cannot read the disc information correctly.

→ Eject the MD once, then insert it again.

C14 / Toc Error

The MD cannot read the disc information correctly.

→ Change the MD with another one.

→ Erase all the recorded contents of the MD using the Erase function.

C41 / Cannot Copy

This unit complies with the Serial Copy Management System (SCMS) which limits the number of digital copies that can be made of any given digital audio source.

E0001 / MEMORY NG

The component has internal problems.

→ Consult your nearest Sony dealer.

E0101 / LASER NG

There is a problem with the laser pickup.

→ The laser pickup may be damaged. Consult your nearest Sony dealer.

Procedure for using the Self-Diagnosis Function (Error History Display Mode).

Note: Perform the self-diagnosis function in the “error history display mode” in the test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If other modes are entered accidentally, press the NAME EDIT/CHARACTER button while REC IT is lit, and when REC IT goes off, press the MD ⏏ button to exit the mode.

1. In the power ON state, set the function to MD, and while pressing the DISPLAY and ■ buttons together, press V-GROOVE . While the test mode is set. “[Check]” will be displayed.
2. Move the multi-stick left and right to display “[Service]” and press the PUSH ENTER button.
3. Move the multi-stick left and right to display “Err Display”.
4. Press the PUSH ENTER button to enter the error history mode. “op rec tm” will be displayed.
5. Select the item to be displayed or executed using the multi-stick.
6. Press the NAME EDIT/CHARACTER button so that REC IT lights up.
7. Press the MD REC MODE button to display the selected item.
8. Press the REC MODE button another time to return to step 4.
9. Pressing the CLEAR button when REC IT is lit displays “Err Display” and exits the error history display mode.
10. To exit the test mode, press the MD ⏏ button while REC IT is off. This sets the standby state and ends the test mode.

ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

Selecting the Test Mode

Display	History
op rec tm	Displays the total recording time. When the total recording time is more than 1 minute, displays the hour and minute When less than 1 minute, displays “Under 1 min” The display time is the time the laser is set to high power, which is about 1/4 of the actual recording time.
op play tm	Displays the total playback time. When the total playback time is more than 1 minute, displays the hour and minute When less than 1 minute, displays “Under 1 min”
spdl rp tm	Displays the total rotating time of the spindle motor. When the total rotating time is more than 1 minute, displays the hour and minute When less than 1 minute, displays “Under 1 min”
retry err	Displays the total number of retry errors during recording and playback Displays “r xx p yy”. xx is the number of errors during recording. yy is the number of errors during playback. This is displayed in hexadecimal from 00 to FF.
total err	Displays the total number of errors Displays “total xx”. This is displayed in hexadecimal from 00 to FF.
err history	Displays the past ten errors. Displays “0x ErrCd@@”. X is the history number. The younger the number, the more recent is the history (00 is the latest). @@ is the error code. Select the error history number using the Multi stick.
retry adrs	Displays the past five retry addresses. Displays “xx ADRS yyyy”, xx is the history number, yyyy is the cluster with the retry error. Select the error history number using the Multi stick.
er refresh	Mode for erasing the error and retry address histories Procedure 1. Press the MD REC MODE button while “REC IT” is lit when displayed as “er refresh”. 2. Press the PUSH ENTER button when the display changes to “er refresh?”. When “Complete!!” is displayed, it means erasure has completed. Be sure to check the following after executing this mode. *Data has been erased. *Perform recording and playback, and check that the mechanism is normal.
op change	Mode for erasing the total time of op rec tm, op play tm. These histories are based on the time of replacement of the optical pick-up. If the optical pick-up has been replaced, perform this procedure and erase the history. Procedure 1. Press the MD REC MODE button while “REC IT” is lit when displayed as “op change”. 2. Press the PUSH ENTER button when the display changes to “op change?”. When “Complete!!” is displayed, it means erasure has completed.
spdl change	Mode for erasing the total spdl rp tm time These histories are based on the time of replacement of the spindle motor. If the spindle motor has been replaced, perform this procedure and erase the history. Procedure 1. Press the MD REC MODE button while “REC IT” is lit when displayed as “spdl change” 2. Press the PUSH ENTER button when the display changes to “spdl change?” When “Complete!!” is displayed, it means erasure has completed.

Table of Error Codes

Error Code	Description
10	Could not load
12	Loading switches combined incorrectly
20	Timed out without reading the top of PTOC
21	Could read top of PTOC, but detected error
22	Timed out without accessing UTOC
23	Timed out without reading UTOC
24	Error in UTOC
30	Could not start playback
31	Error in sector
40	Retry cause generated during normal recording
41	Retried in DRAM overflow
42	Retry occurred during TOC writing
43	Retry aborted during S.F editing
50	Other than access processing, and could not read address.
51	Focus NG occurred and overran.

TABLE OF CONTENTS

1. SERVICING NOTES ········ 6

2. GENERAL ········ 14

3. DISASSEMBLY ········ 17

4. TEST MODE ········ 25

5. MECHANICAL ADJUSTMENTS ········ 33

6. ELECTRICAL ADJUSTMENTS ········ 33

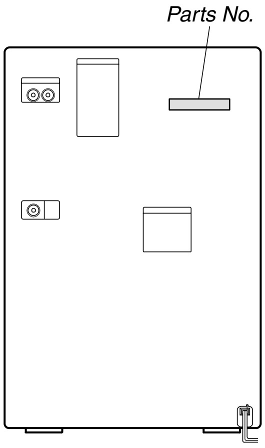
7. DIAGRAMS ········ 48
- 7-1. Circuit Boards Location ········ 48
- 7-2. Block Diagrams ········ 51
- 7-3. Printed Wiring Board – Deck Section – ········ 56
- 7-4. Schematic Diagram – Deck Section – ········ 57
- 7-5. Printed Wiring Board – CD Section – ········ 58
- 7-6. Schematic Diagram – CD Section – ········ 59
- 7-7. Printed Wiring Board – MD Section – ········ 60
- 7-8. Schematic Diagram – MD (1/2) Section – ········ 61
- 7-9. Schematic Diagram – MD (2/2) Section – ········ 62
- 7-10. Printed Wiring Board – Main Section – ········ 63
- 7-11. Schematic Diagram – Main (1/4) Section – ········ 64
- 7-12. Schematic Diagram – Main (2/4) Section – ········ 65
- 7-13. Schematic Diagram – Main (3/4) Section – ········ 66
- 7-14. Schematic Diagram – Main (4/4) Section – ········ 67
- 7-15. Printed Wiring Board – Digital (Side A) Section – ········ 68
- 7-16. Printed Wiring Board – Digital (Side B) Section – ········ 69
- 7-17. Schematic Diagram – Digital (1/2) Section – ········ 70
- 7-18. Schematic Diagram-Digital (2/2) Section ········ 71
- 7-19. Printed Wiring Board – Amp Section – ········ 72
- 7-20. Schematic Diagram – Amp Section – ········ 73
- 7-21. Printed Wiring Board – Panel Section – ········ 74
- 7-22. Schematic Diagram – Panel Section – ········ 75
- 7-23. Printed Wiring Board – Switch Section – ········ 76
- 7-24. Schematic Diagram – Switch Section – ········ 77
- 7-25. Printed Wiring Board – CD Mechanism Section – ········ 78
- 7-26. Schematic Diagram – CD Mechanism Section – ········ 79
- 7-27. Printed Wiring Board – Leaf Sw Section – ········ 80
- 7-28. Schematic Diagram – Leaf Sw Section – ········ 80
- 7-29. Printed Wiring Board – Mic Section – ········ 81
- 7-30. Schematic Diagram – Mic Section – ········ 81
- 7-31. Printed Wiring Board – Power Supply Section – ········ 82
- 7-32. Schematic Diagram – Power Supply Section – ········ 83
- 7-33. Schematic Diagram – Video CD Section (1/2) – ········ 84
- 7-34. Schematic Diagram – Video CD Section (2/2) – ········ 85
- 7-35. Printed Wiring Boards – Video CD Section – ········ 86
- 7-36. IC Block Diagrams ········ 87
- 7-37. IC Pin Functions ········ 94

8. EXPLPDED VIEWS ········ 105
- 8-1. Back Panel Section ········ 105
- 8-2. Front Panel Section ········ 106
- 8-3. Chassis Section ········ 107
- 8-4. CD Mechanism Deck Section-1 ········ 108
- 8-5. CD Mechanism Deck Section-2 ········ 109
- 8-6. Tape Mechanism Deck Section ········ 110
- 8-7. MD Mechanism Section-1 ········ 111
- 8-8. MD Mechanism Section-2 ········ 112

9. ELECTRICAL PARTS LIST ········ 113

MODEL IDENTIFICATION

— BACK PANEL —



MODEL	PARTS No.
SP, MY model	4-227-557-0☐
HK model	4-227-557-1☐
JE model	4-227-557-2☐

- Abbreviation
  - HK : Hong Kong model
  - MY : Malaysia model
  - SP : Singapore model
  - JE : Tourist model

SECTION 1
SERVICE NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

FOR CD

NOTES ON LASER DIODE EMISSION CHECK

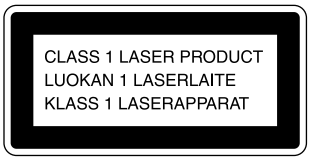
The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

FOR MD

NOTES ON LASER DIODE EMISSION CHECK

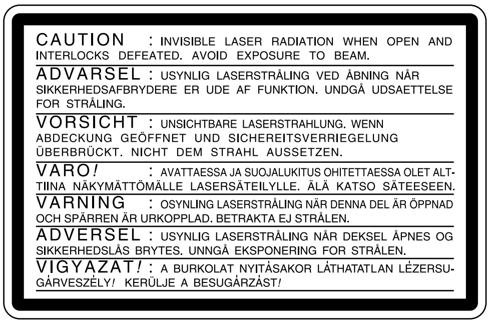
Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.



CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.

VORSICHT : UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET UND SICHEREITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.

VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

VARNING : OSYNLING LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

ADVERSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.

VIGYAZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

This caution label is located inside the unit.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

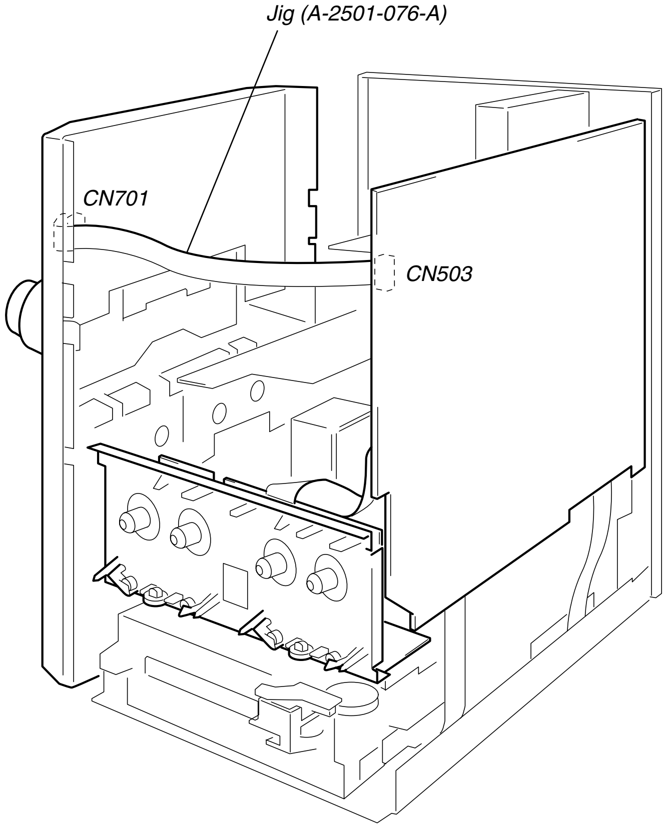
Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

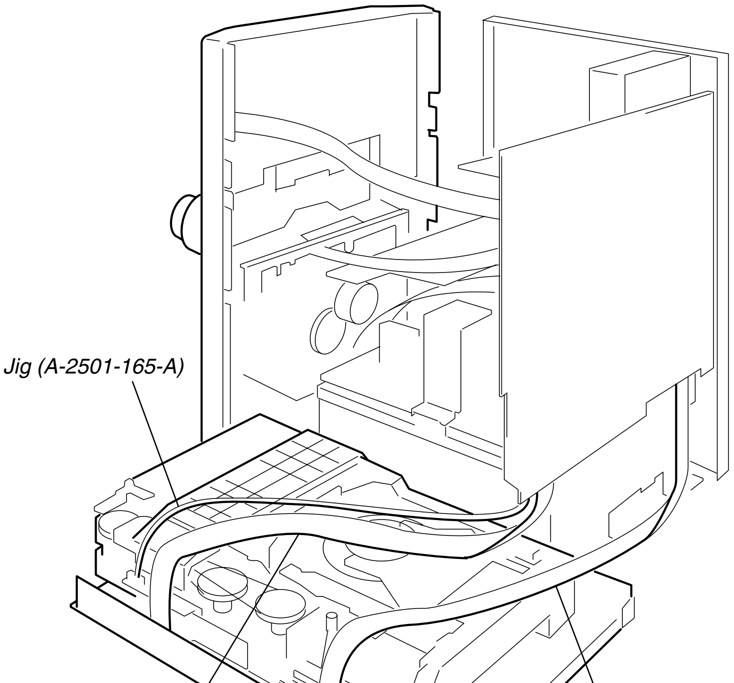
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICE POSITION

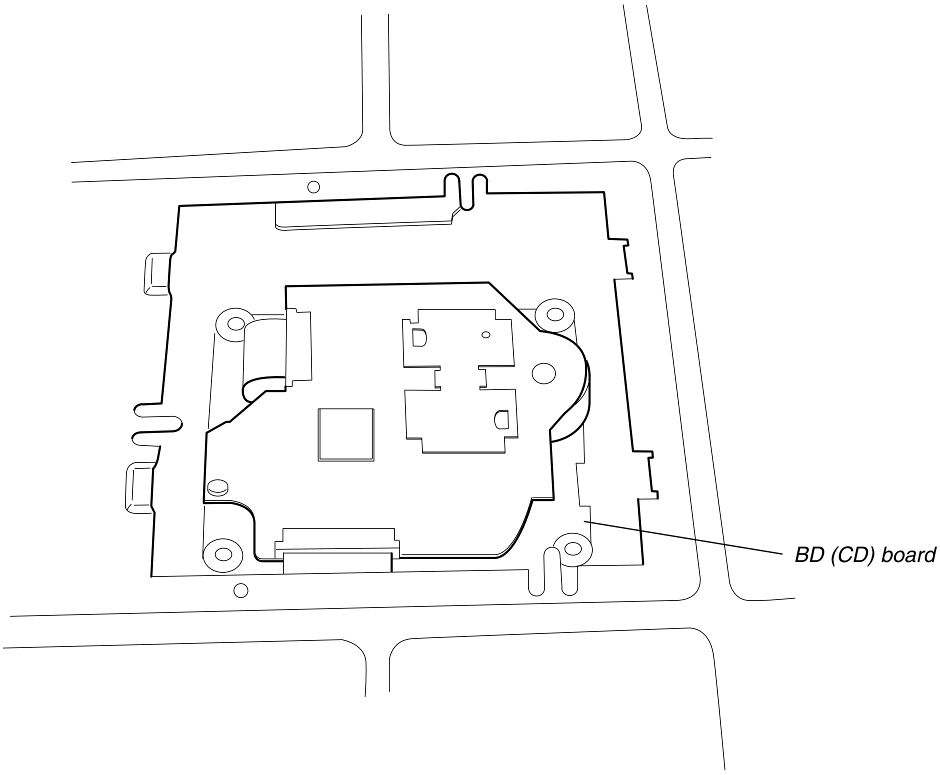

Jig (A-2501-076-A)
CN701
CN503

• CD MECHANISM BLOCK


Jig (A-2501-165-A)
Jig (A-2501-167-A)
Jig (A-2501-016-A)

• BD (CD) BOARD

To repair the BD (CD) board,remove the bottom plate.

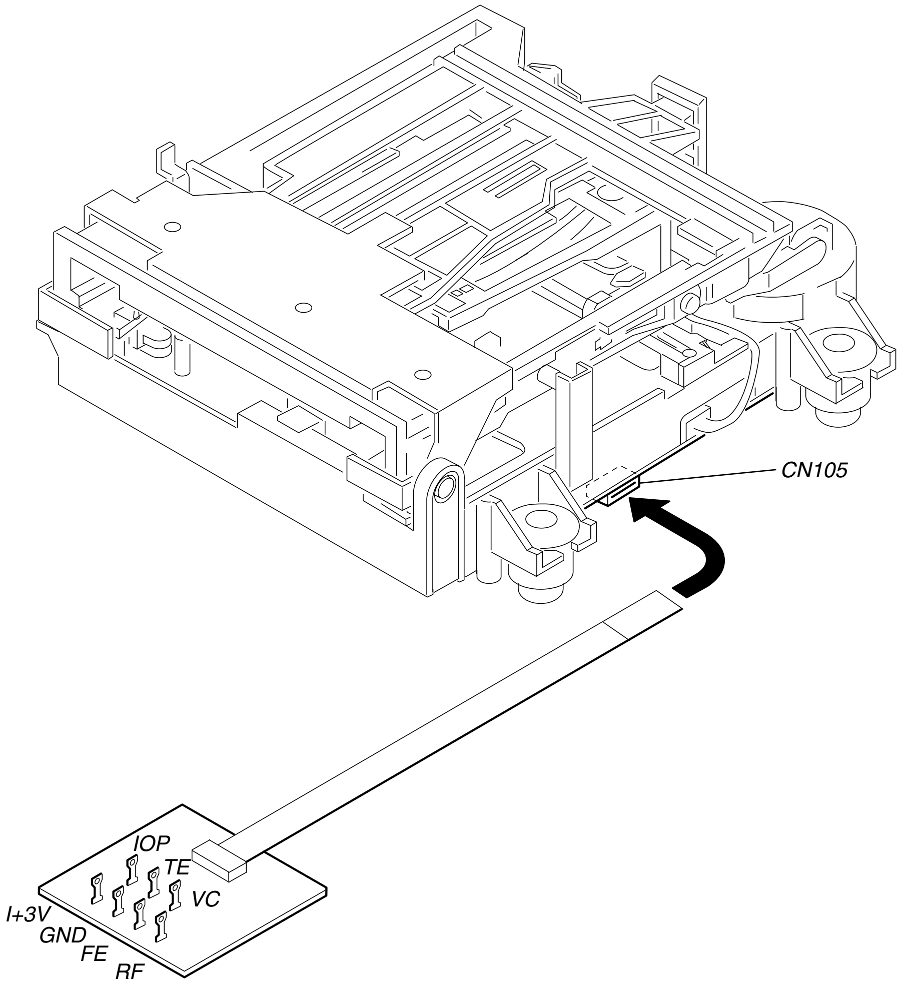


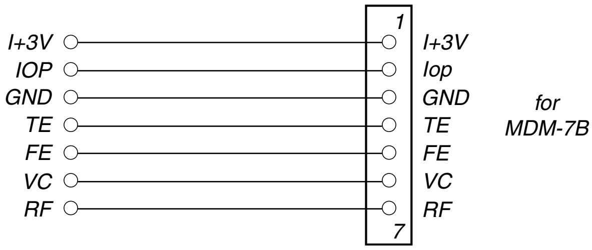
Bottom view

JIG FOR CHECKING BD (MD) BOARD WAVEFORM

The special jig (J-2501-196-A) is useful for checking the waveform of the BD (MD) board. The names of terminals and the checking items to be performed are shown as follows.

GND : Ground
I+3V : For measuring IOP (Check the deterioration of the optical pick-up laser)
IOP : For measuring IOP (Check the deterioration of the optical pick-up laser)
TE : TRK error signal (Traverse adjustment)
VC : Reference level for checking the signal
RF : RF signal (Check jitter)
FE : Focus error signal


CN105
IOP
TE
VC
I+3V
GND
FE
RF


I+3V
IOP
GND
TE
FE
VC
RF
1
7
I+3V
Iop
GND
TE
FE
VC
RF
for
MDM-7B

Iop DATA RECORDING AND DISPLAY WHEN OPTICAL PICK-UP AND NON-VOLATILE MEMORY (IC195 OF BD (MD) BOARD) ARE REPLACED

The Iop value labeled on the optical pick-up can be recorded in the non-volatile memory. By recording the value, it will eliminate the need to look at the value on the label of the optical pick-up. When replacing the optical pick-up or non-volatile memory (IC195 of BD (MD) board), record the Iop value on the optical pick-up according to the following procedure.

Record Precedure:

1. In the power ON state, set the function to MD, and while pressing the DISPLAY and ■ buttons together, press V-GROOVE .
2. Move the Multi stick to display “[Service]”, and press the PUSH ENTER button.
3. Move the Multi stick to display “Iop Write” (C05), and press the PUSH ENTER button.
4. The display becomes “Ref=@@@.@” (@ is an arbitrary number) and the numbers which can be changed will blink.
5. Input the Iop value written on the optical pick-up.
   To select the number : Move the Multi stick.
   To select the digit : Press the MD REC MODE button while REC IT is lit.
6. When the PUSH ENTER button is pressed, the display becomes “Measu=@@@.@” (@ is an arbitrary number).
7. As the adjustment results are recorded for the 6 value. Leave it as it is and press the PUSH ENTER button.
8. “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write” (C05).

Display Precedure:

1. In the power ON state, set the function to MD, and while pressing the DISPLAY and ■ buttons together, press V-GROOVE .
2. Move the Multi stick to display “[Service]”, and press the PUSH ENTER button.
3. Move the Multi stick to display “Iop Read” (C26).
4. “@@.@/##.#” is displayed and the recorded contents are displayed.
   @@.@ : indicates the Iop value labeled on the optical pick-up.
   ##.# : indicates the Iop value after adjustment
5. To end, press the NAME EDIT/CHARACTER button while REC IT is lit, or press the MD REC MODE button to display “Iop Read” (C26).

CHECKS PRIOR TO PARTS REPLACEMENT AND ADJUSTMENTS

Before performing repairs, perform the following checks to determine the faulty locations up to a certain extent.
Details of the procedures are described in “6 Electrical Adjustments”.

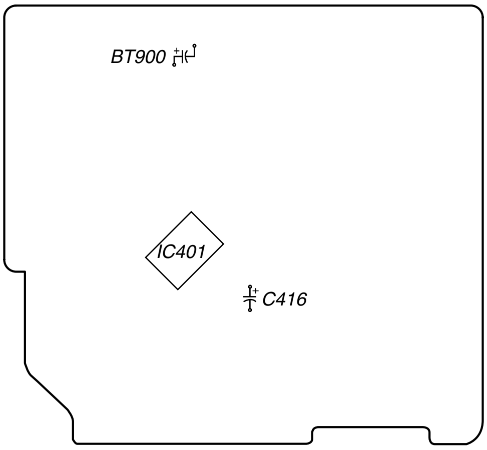
- 6-6-2. Laser power check (see page 41)
- 6-6-3. Iop Compare (see page 41)
- 6-6-4. Auto Check (see page 42)

Note:
The criteria for determination above is intended merely to determine if satisfactory or not, and does not serve as the specified value for adjustments.
When performing adjustments, use the specified values for adjustments.

FORCED RESET

The system microprocessor can be reset in the following procedure.
Use these procedure when the unit cannot be operated normally due to the overrunning of the microprocessor, etc.
Procedure :
1. Disconnect the AC outlet.
2. Momentary short between BT900 pin ⊕ and BT900 pin ⊖ by lead wire.
3. Momentary short between C416 pin ⊕ and C416 pin ⊖ by lead wire.

[MAIN BOARD]



RETRY CAUSE DISPLAY MODE

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent indicator tube. During playback, the "track mode" for obtaining track information will be set.
  This is useful for locating the faulty part of the unit.
- The following will be displayed :
  During recording and stop : Retry cause, number of retries, and number of retry errors.
  During playback : Information such as type of disc played, part played, copyright.
  These are displayed in hexadecimal.

Procedure:

1. Press the ■ button and DISPLAY button, CINEMA SPACE button.
2. When the mode is set, "RTs 00c 00e 000" is displayed.
3. Press the MD REC button to start recording. Then press the MD ►II button and start recording.
4. To check the "track mode", press the MD ►II button to start play.
5. To exit the test mode, press the I/⏻ button, and turn OFF the power. When "TOC" disappears, disconnect the power plug from the outlet. If the test mode cannot be exited, refer to "Forced Reset" on page 12 .

Fig. 1 Reading the Test Mode Display
(During recording and stop)

RTs@@c##c***
Fluorescent indicator tube

@@ : Cause of retry
: Number of retries
*** : Number of retry errors

Fig. 2 Reading the Test Mode Display

(During playback)

@@####**$$
Fluorescent indicator tube

@@ : Parts No. (name of area named on TOC)
: Cluster } Address (Physical address on disc)
** : Sector } Address (Physical address on disc)
$$: Track mode (Track information such as copyright information of each part)

Reading the Retry Cause Display

	Higher Bits				Lower Bits				Hexa-decimal	Cause of Retry	Occurring conditions
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock	When track jump (shock) is detected
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	DIN unlock	When DIN unlock is detected
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	CLV unlock	When CLV is unlocked
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example

When 42 is displayed:
Higher bit : 4 = 0100 → b6
Lower bit : 2 = 0010 → b1
In this case, the retry cause is combined of "CLV unlock" and "ader5".

When A2 is displayed:
Higher bit : A = 1010 → b7+b5
Lower bit : 2 = 0010 → b1
The retry cause in this case is combined of "access fault", "IVR rec error", and "ader5".

Reading the Track Mode Display

	Higher Bits				Lower Bits				Hexa-decimal	Details	
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0		When 0	When 1
Binary	0	0	0	0	0	0	0	1	01	Emphasis OFF	Emphasis ON
	0	0	0	0	0	0	1	0	02	Monaural	Stereo
	0	0	0	0	0	1	0	0	04	This is 2-bit display. Normally 01.	
	0	0	0	0	1	0	0	0	08	01:Normal audio. Others:Invalid	
	0	0	0	1	0	0	0	0	10	Audio (Normal)	Invalid
	0	0	1	0	0	0	0	0	20	Original	Digital copy
	0	1	0	0	0	0	0	0	40	Copyright	No copyright
	1	0	0	0	0	0	0	0	80	Write prohibited	Write allowed

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

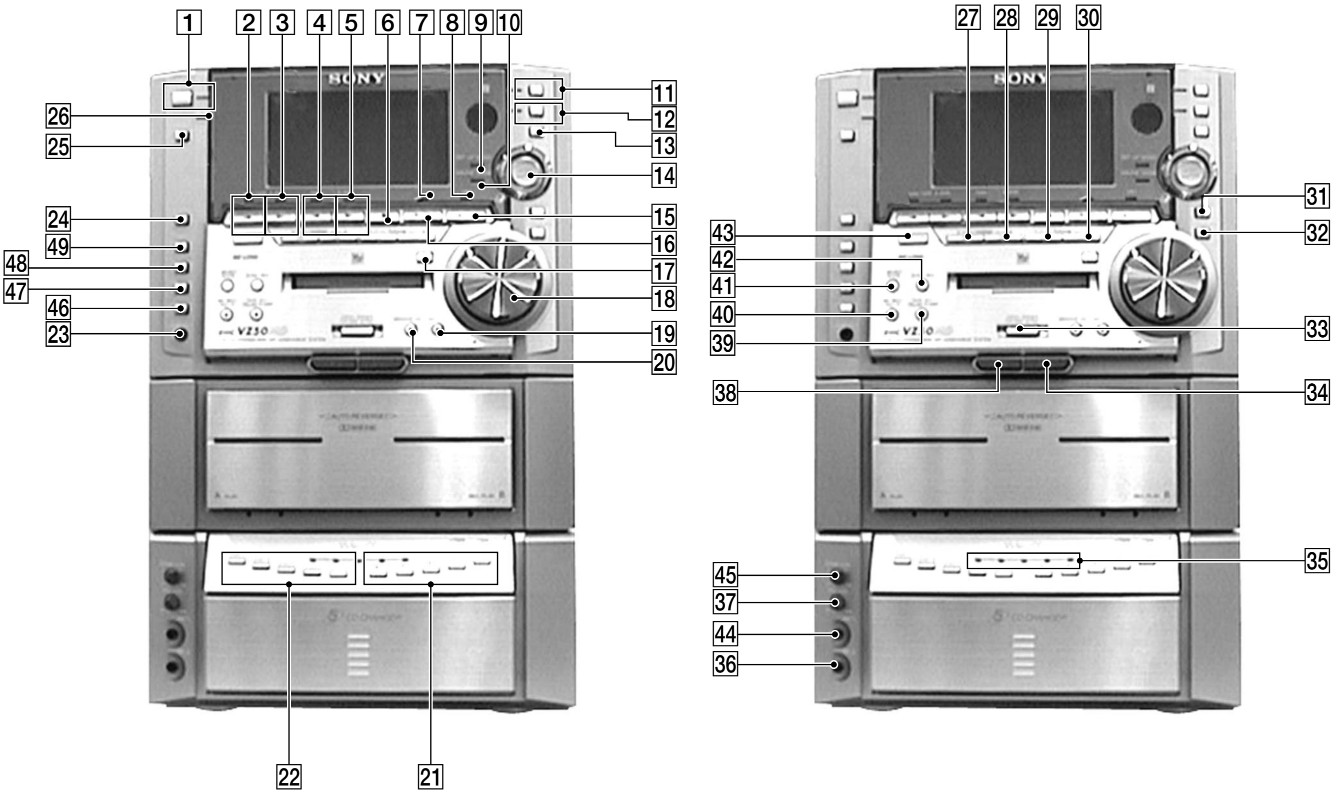
Example When 84 is displayed:
Higher bit : 8 = 1000 ⟶ b7
Lower bit : 4 = 0100 ⟶ b2
In this case, as b2 and b7 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis OFF”, “Monaural”, “Original”, “Copyright”, and “Write allowed”.

Example When 07 is displayed:
Higher bit : 0 = 0000 ⟶ All 0
Lower bit : 7 = 0111 ⟶ b0+b1+b2
In this case, as b0, b1, and b2 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis ON”, “Stereo”, “Original”, “Copyright”, and “Write prohibited”.

Hexadecimal ⟶ Binary Conversion Table

Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

SECTION 2
GENERAL



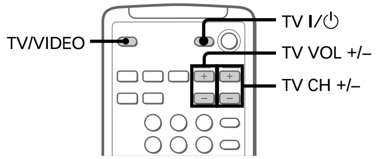
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
47
48
46
49
SONY
VZ50
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45

1 I/⏻ button and indicator
2 TAPE A ◁ button and indicator
3 TAPE A ▷ button and indicator
4 TAPE B ◁ button and indicator
5 TAPE B ▷ button and indicator
6 ■ button
7 CD indicator
8 MD indicator
9 SET UP MODE indicator
10 SOUND MODE indicator
11 CINEMA SPACE button and indicator
12 V-GROOVE button and indicator
13 MODE SELECT button
14 PUSH ENTER button/Multi stick
15 MD ▶❚❚ button
16 CD ▶❚❚ button
17 MD ⏏ button
18 VOLUME knob
19 GROOVE button and indicator
20 GROOVE EX button and indicator
21 ⏏ 1 to ⏏ 5 buttons
22 DISC 1 to DISC 5 buttons
23 PHONES jack
24 FUNCTION button
25 DISPLAY button
26 TIMER SELECT indicator
27 ⏮ button
28 ⏭ button
29 ◀◀ button
30 ▶▶ button
31 NAME EDIT/CHARACTER button
32 CLEAR button
33 HIGH SPEED CD-MD SYNC button
34 TAPE B ⏏ button
35 DISC 1 to DISC 5 indicator
36 MIC 2 jack
37 MIC VOL knob
38 TAPE A ⏏ button
39 TAPE REC PAUSE/START button and indicator
40 MD REC / REC IT button and indicator
41 MD REC MODE button
42 SYNC REC button
43 TUNER/BAND button
44 MIC 1 jack
45 ECHO VOL knob
46 PREVIOUS button
47 NEXT button
48 RETURN button
49 SELECT button

Step 1: Hooking up the system (continued)

Using the remote

You can use the shaded buttons shown below to operate a Sony TV.



To	Press
Turn the TV on or off	TV I/⏻.
Switch the TV's video input	TV/VIDEO.
Change the TV channels	TV CH +/–.
Adjusts the volume of the TV speaker(s)	TV VOL +/–.

Tip

With normal use, the batteries should last for about six months. When the remote no longer operates the system, replace both batteries with new ones.

Note

If you do not use the remote for a long period of time, remove the batteries to avoid possible damage from battery leakage.

When carrying this system

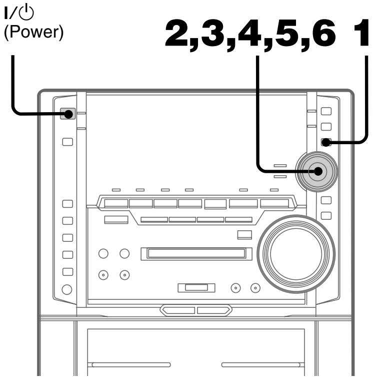
Do the following to protect the CD mechanism. Make sure that all discs are removed from the unit.

1. Press FUNCTION repeatedly until "CD" appears in the display.
2. Hold down V-GROOVE and press I/⏻ so that "LOCK" appears in the display.

Step 2: Setting the time

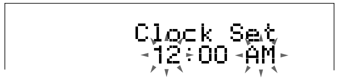
You must set the time before using the timer functions.

The clock is on a 12-hour system.



1 Press MODE SELECT when the system is turned off.
"Clock Set ?" appears.

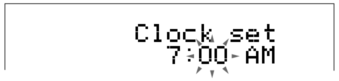
2 Press PUSH ENTER.
The hour indication flashes.



continued

3 Move the multi stick toward ▲ or ▼ repeatedly to set the hour.

4 Move the multi stick toward ▶.
The minute indication flashes.



5 Move the multi stick toward ▲ or ▼ repeatedly to set the minute.

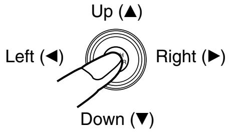
6 Press PUSH ENTER.

To cancel the menu operation

Press MODE SELECT.

Tips

- Refer to the illustration to use the multi stick. Place your finger on the center of the multi stick and move in the direction you want (up/down or left/right shown ▲/▼ or ◀/▶ in this manual).



- If you've made a mistake, start over from step 1.

To change the time

The previous explanation shows you how to set the time while the power is off. To change the time while the power is on, do the following:

1. Press MODE SELECT repeatedly to select "Set Up Mode", then press PUSH ENTER.
2. Move the multi stick toward ◀ or ▶ repeatedly to select "Timer Set Up ?", then press PUSH ENTER.
3. Move the multi stick toward ◀ or ▶ repeatedly to select "Clock Set ?", then press PUSH ENTER.
4. Perform steps 3 through 6 on the left.

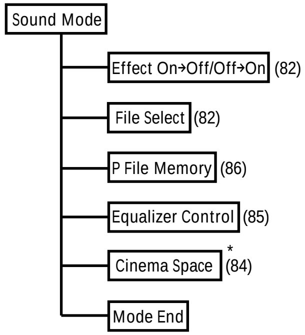
Note

The clock settings are canceled when you disconnect the power cord or if a power failure occurs.

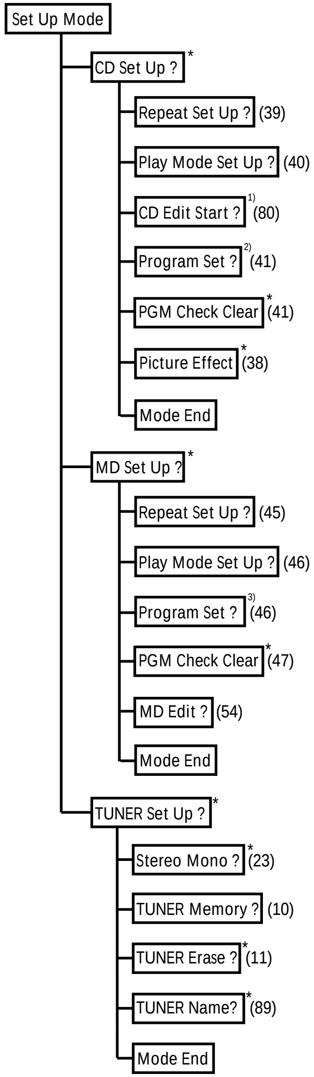
This section is extracted from instruction manual.

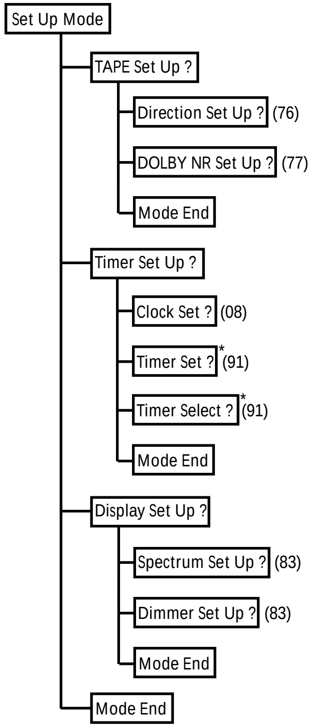
Items in “Sound Mode” and “Set Up Mode”

The numbers in parenthesis denotes the page number for the item.


Sound Mode
Effect On→Off/Off→On (82)
File Select (82)
P File Memory (86)
Equalizer Control (85)
Cinema Space * (84)
Mode End

- **To cancel the menu operation, press MODE SELECT.**
- The items with asterisk (*) cannot be selected depending on the situation.
- Select “Mode End” to finish the menu operation.


Set Up Mode
CD Set Up ? *
Repeat Set Up ? (39)
Play Mode Set Up ? (40)
CD Edit Start ? 1) (80)
Program Set ? 2) (41)
PGM Check Clear * (41)
Picture Effect * (38)
Mode End
MD Set Up ? *
Repeat Set Up ? (45)
Play Mode Set Up ? (46)
Program Set ? 3) (46)
PGM Check Clear * (47)
MD Edit ? (54)
Mode End
TUNER Set Up ? *
Stereo Mono ? * (23)
TUNER Memory ? (10)
TUNER Erase ? * (11)
TUNER Name? * (89)
Mode End


Set Up Mode
TAPE Set Up ?
Direction Set Up ? (76)
DOLBY NR Set Up ? (77)
Mode End
Timer Set Up ?
Clock Set ? (08)
Timer Set ? * (91)
Timer Select ? * (91)
Mode End
Display Set Up ?
Spectrum Set Up ? (83)
Dimmer Set Up ? (83)
Mode End
Mode End

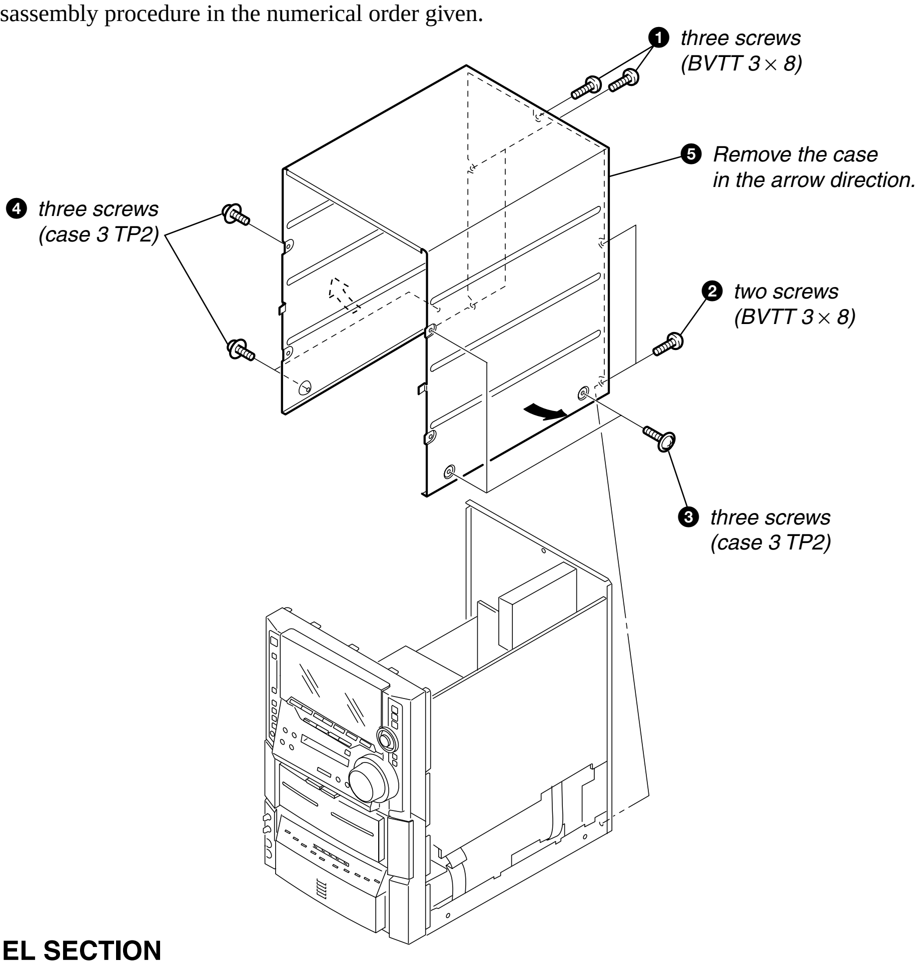
1) Cannot be selected during CD playback.
2) Cannot be selected during CD program playback.
3) Cannot be selected during MD playback.

- The items with asterisk (*) cannot be selected depending on the situation.

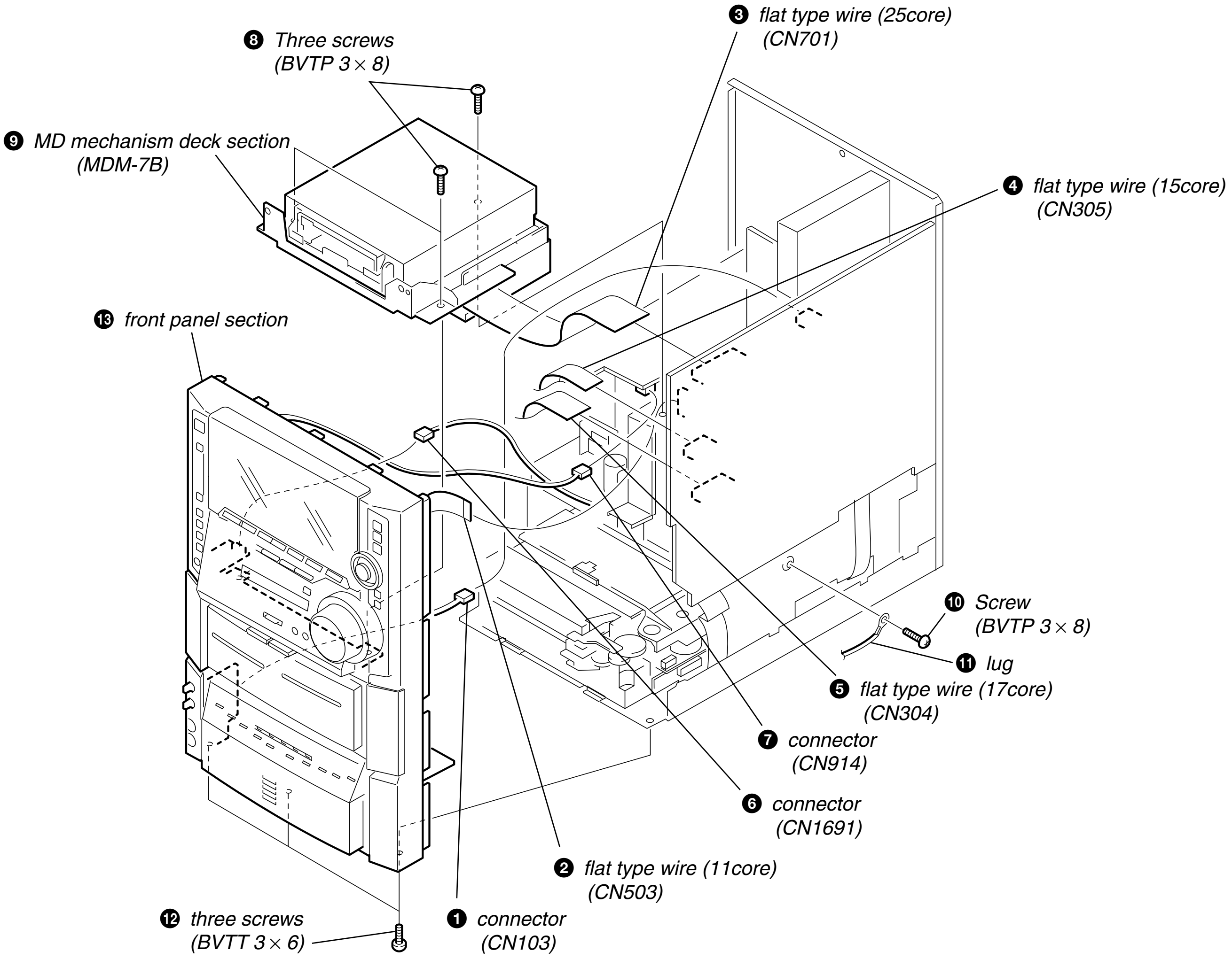
SECTION 3
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

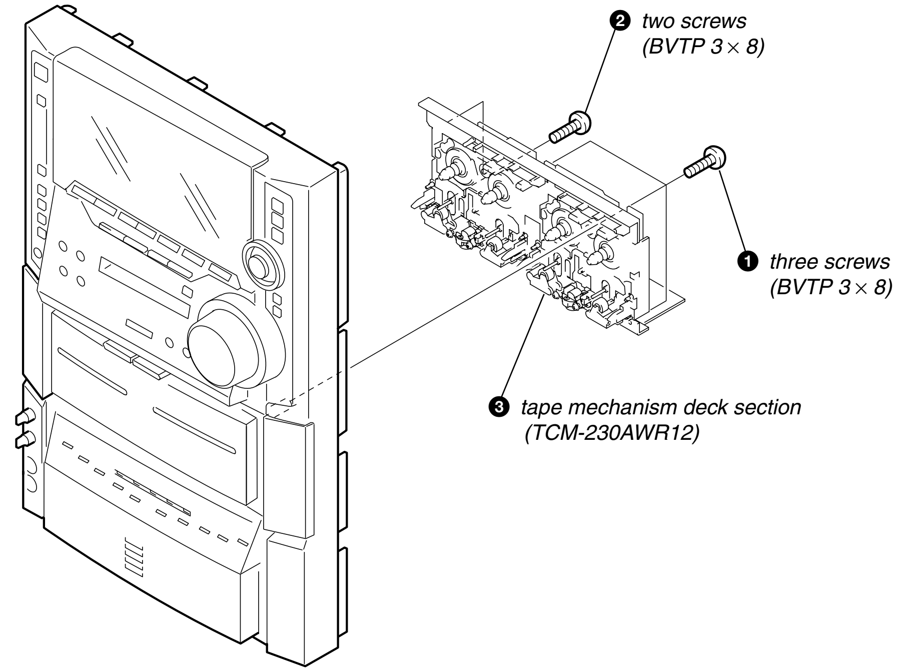
3-1. CASE


❶ three screws
(BVTT 3 × 8)
❷ two screws
(BVTT 3 × 8)
❸ three screws
(case 3 TP2)
❹ three screws
(case 3 TP2)
❺ Remove the case
in the arrow direction.

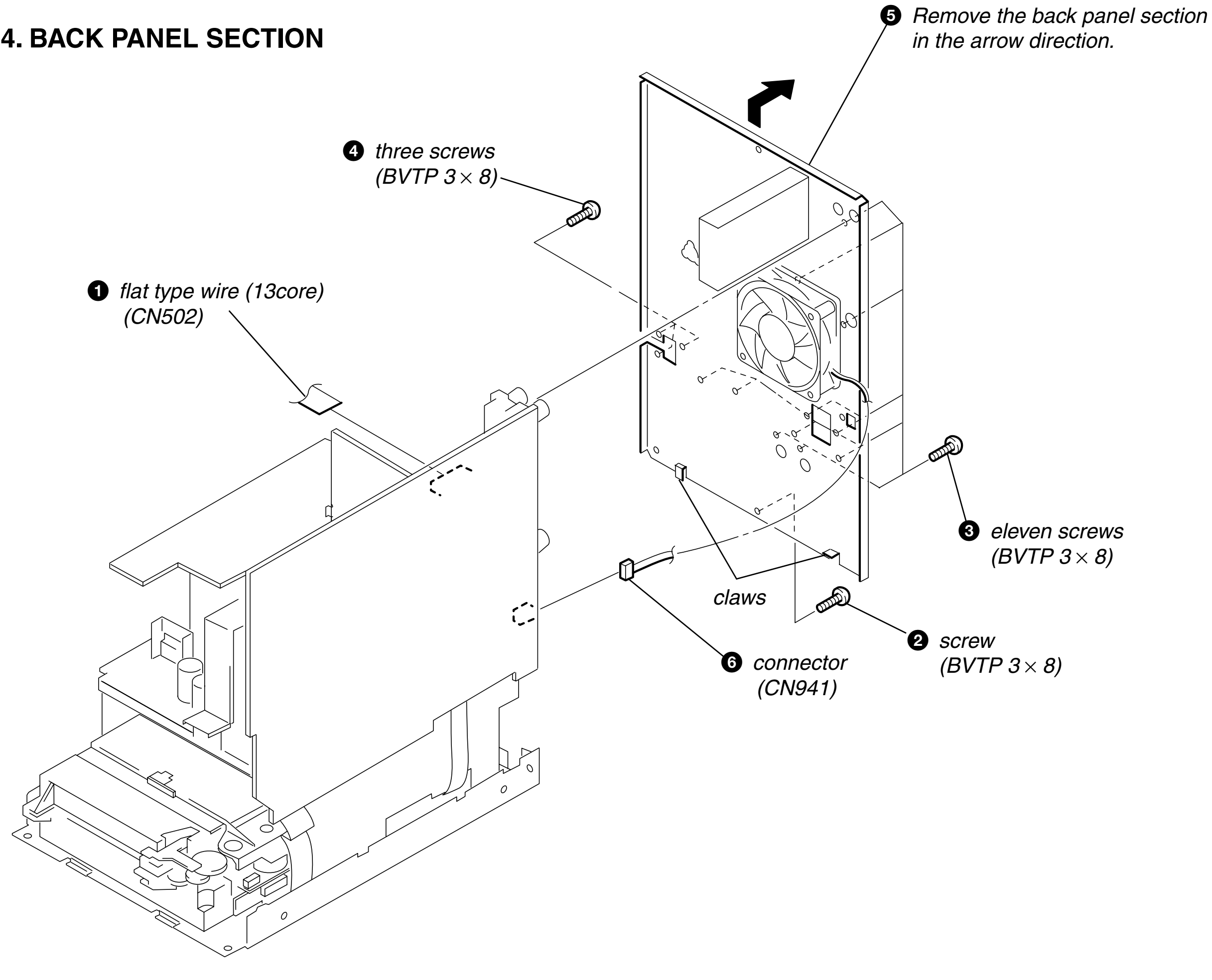
3-2. FRONT PANEL SECTION


❶ connector
(CN103)
❷ flat type wire (11core)
(CN503)
❸ flat type wire (25core)
(CN701)
❹ flat type wire (15core)
(CN305)
❺ flat type wire (17core)
(CN304)
❻ connector
(CN1691)
❼ connector
(CN914)
❽ Three screws
(BVTP 3 × 8)
❾ MD mechanism deck section
(MDM-7B)
❿ Screw
(BVTP 3 × 8)
⓫ lug
⓬ three screws
(BVTT 3 × 6)
⓭ front panel section

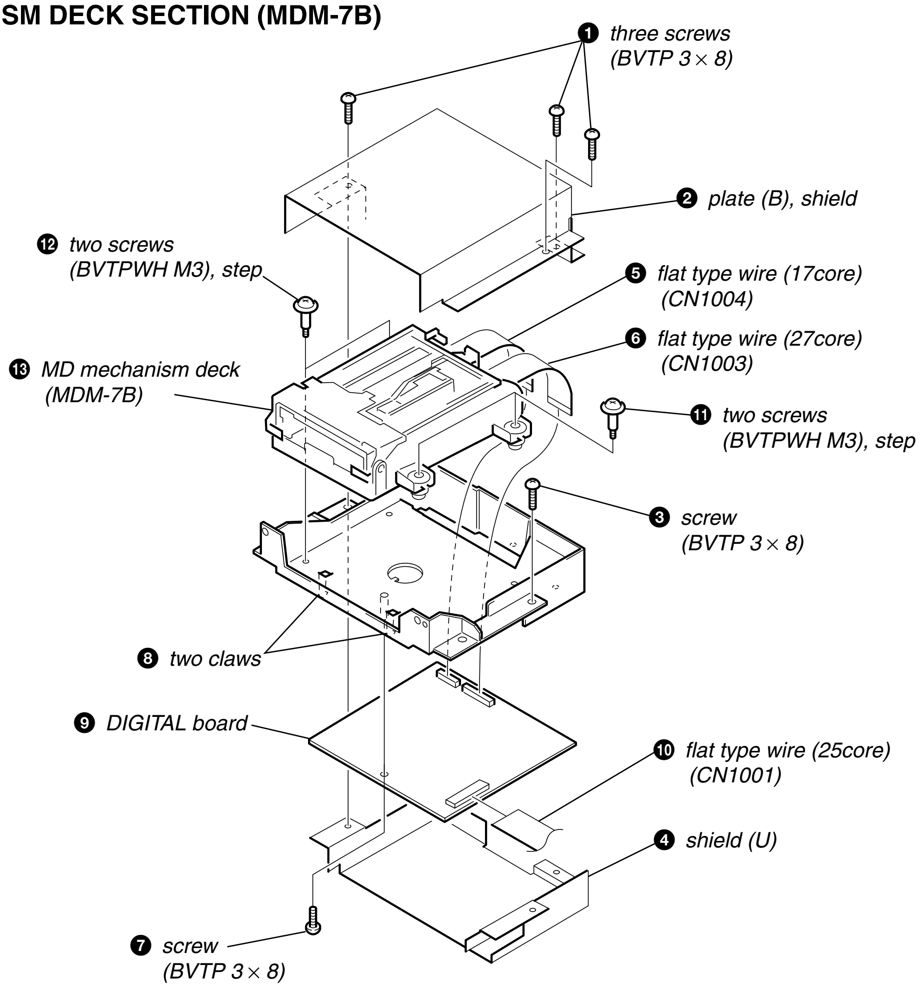
3-3. TAPE MECHANISM DECK SECTION (TCM-230AWR12)


❷ two screws (BVTP 3 × 8)
❶ three screws (BVTP 3 × 8)
❸ tape mechanism deck section (TCM-230AWR12)

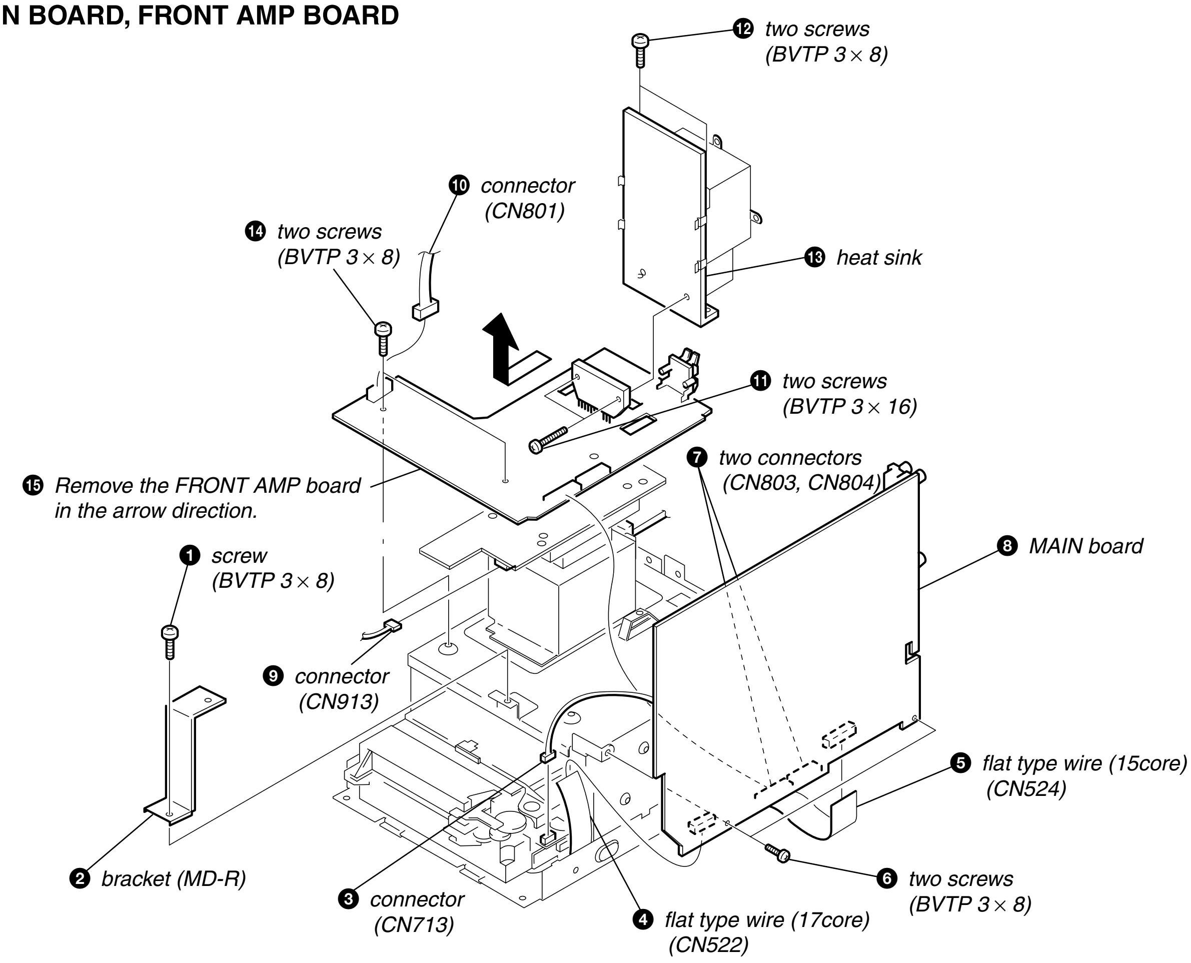
3-4. BACK PANEL SECTION


❺ Remove the back panel section in the arrow direction.
❹ three screws (BVTP 3 × 8)
❶ flat type wire (13core) (CN502)
❸ eleven screws (BVTP 3 × 8)
claws
❷ screw (BVTP 3 × 8)
❻ connector (CN941)

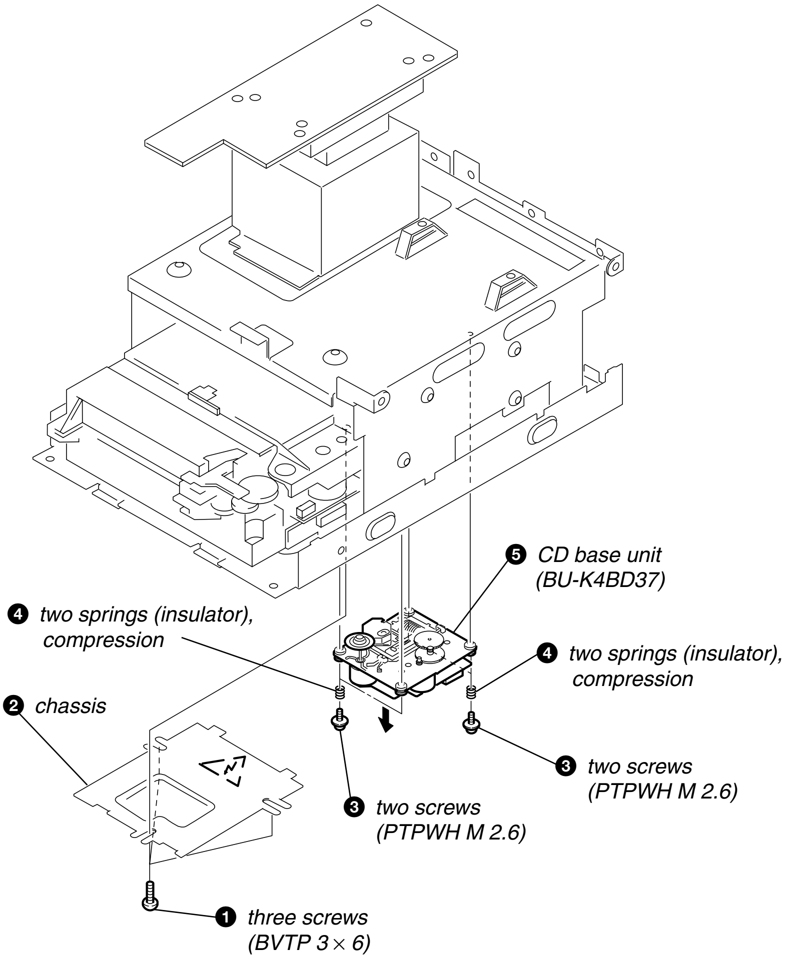
3-5. MD MECHANISM DECK SECTION (MDM-7B)


① three screws (BVTP 3 × 8)
② plate (B), shield
⑫ two screws (BVTPWH M3), step
⑤ flat type wire (17core) (CN1004)
⑥ flat type wire (27core) (CN1003)
⑬ MD mechanism deck (MDM-7B)
⑪ two screws (BVTPWH M3), step
③ screw (BVTP 3 × 8)
⑧ two claws
⑨ DIGITAL board
⑩ flat type wire (25core) (CN1001)
④ shield (U)
⑦ screw (BVTP 3 × 8)

3-6. MAIN BOARD, FRONT AMP BOARD

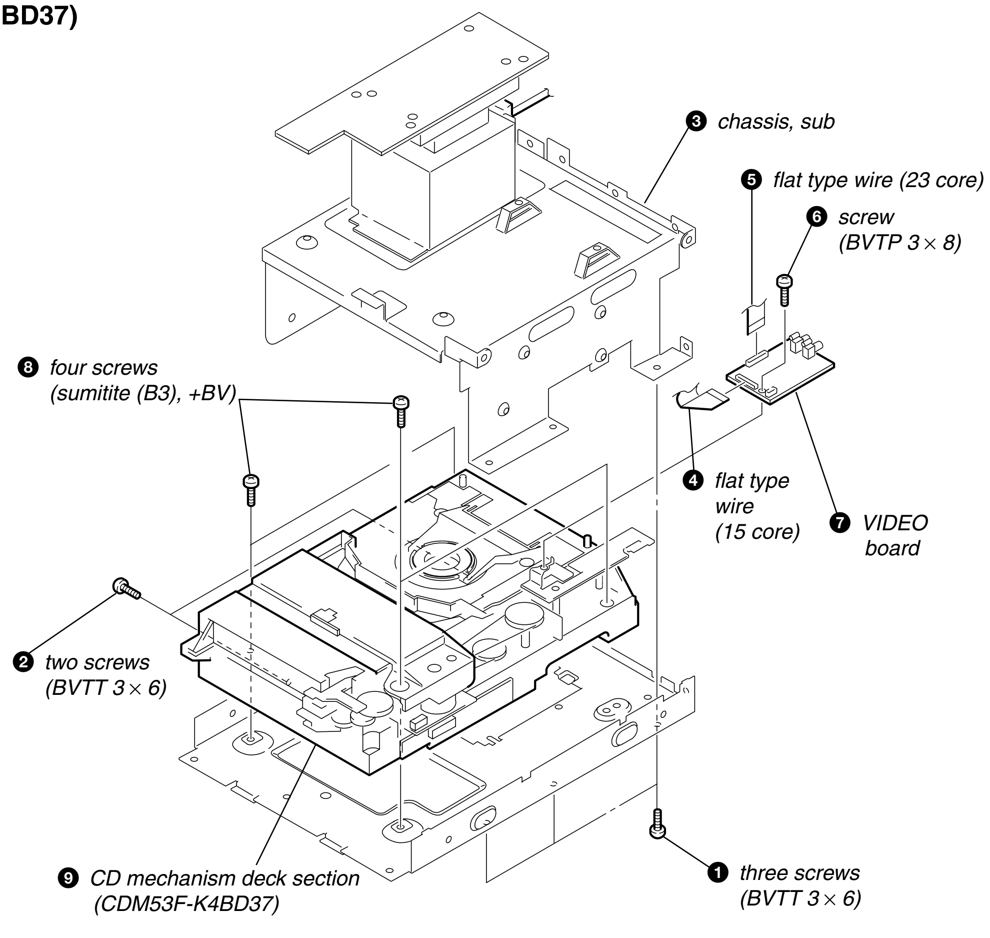

⑫ two screws (BVTP 3 × 8)
⑩ connector (CN801)
⑭ two screws (BVTP 3 × 8)
⑬ heat sink
⑪ two screws (BVTP 3 × 16)
⑦ two connectors (CN803, CN804)
⑮ Remove the FRONT AMP board in the arrow direction.
⑧ MAIN board
① screw (BVTP 3 × 8)
⑨ connector (CN913)
⑤ flat type wire (15core) (CN524)
② bracket (MD-R)
⑥ two screws (BVTP 3 × 8)
③ connector (CN713)
④ flat type wire (17core) (CN522)

3-7. CD BASE UNIT (BU-K4BD37)



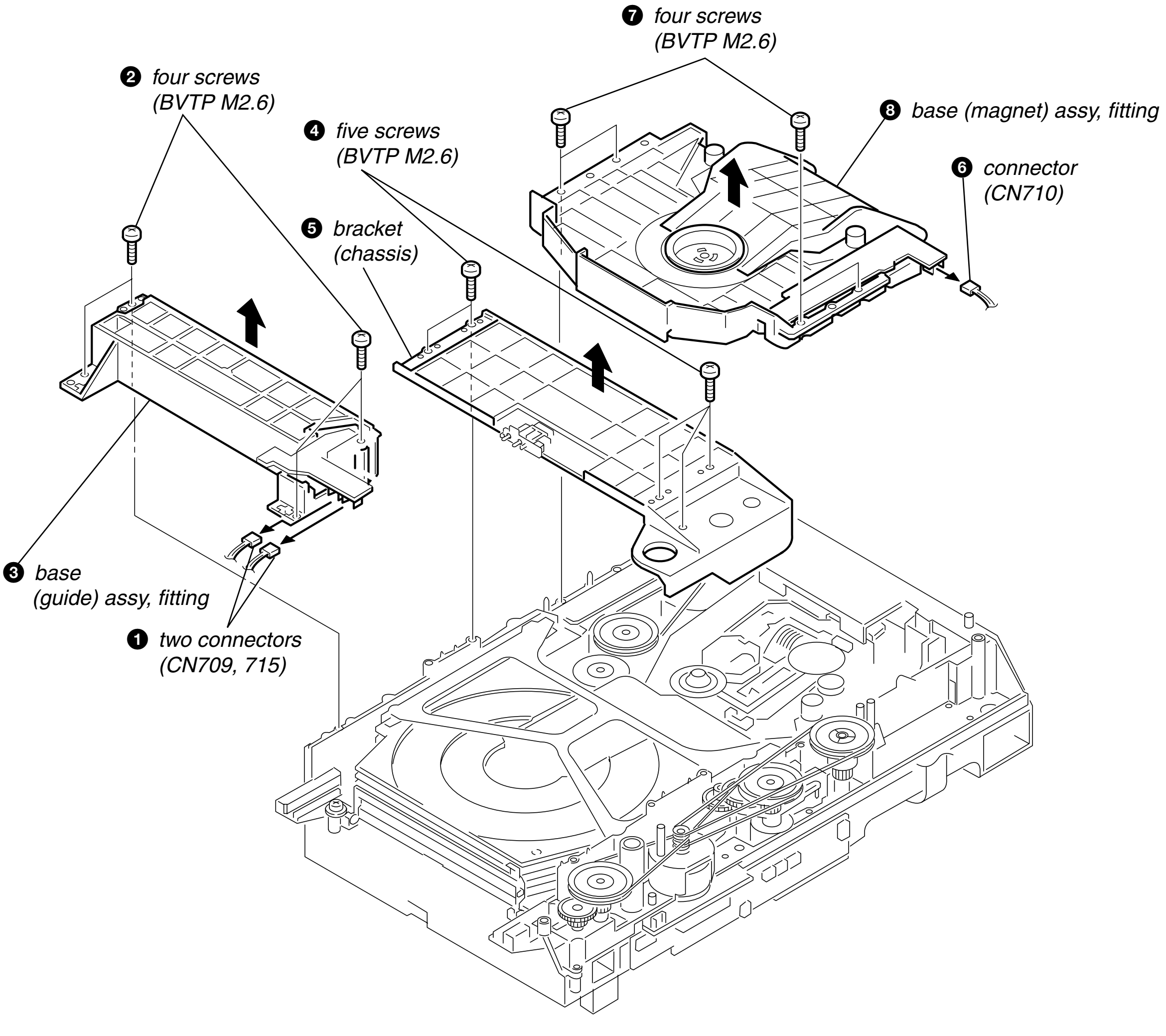
❺ CD base unit (BU-K4BD37)
❹ two springs (insulator), compression
❹ two springs (insulator), compression
❷ chassis
❸ two screws (PTPWH M 2.6)
❸ two screws (PTPWH M 2.6)
❶ three screws (BVTP 3 × 6)

3-8. CD MECHANISM DECK SECTION (CDM53F-K4BD37)



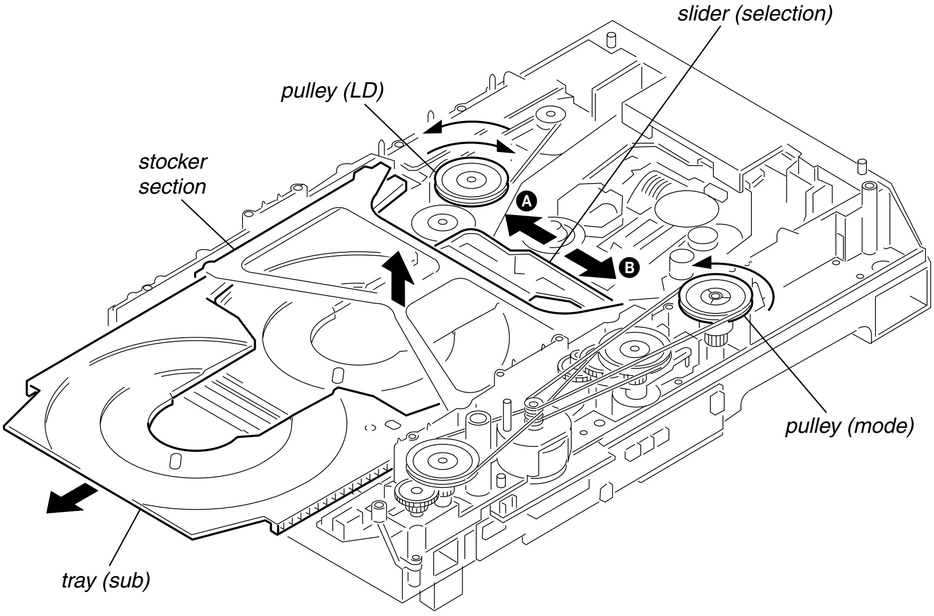
❸ chassis, sub
❺ flat type wire (23 core)
❻ screw (BVTP 3 × 8)
❽ four screws (sumitite (B3), +BV)
❹ flat type wire (15 core)
❼ VIDEO board
❷ two screws (BVTT 3 × 6)
❾ CD mechanism deck section (CDM53F-K4BD37)
❶ three screws (BVTT 3 × 6)

3-9. FITTING BASE (GUIDE) ASSY, BRACKET (CHASSIS) AND FITTING BASE (MAGNET) ASSY


❼ four screws
(BVTP M2.6)
❷ four screws
(BVTP M2.6)
❽ base (magnet) assy, fitting
❹ five screws
(BVTP M2.6)
❻ connector
(CN710)
❺ bracket
(chassis)
❸ base
(guide) assy, fitting
❶ two connectors
(CN709, 715)

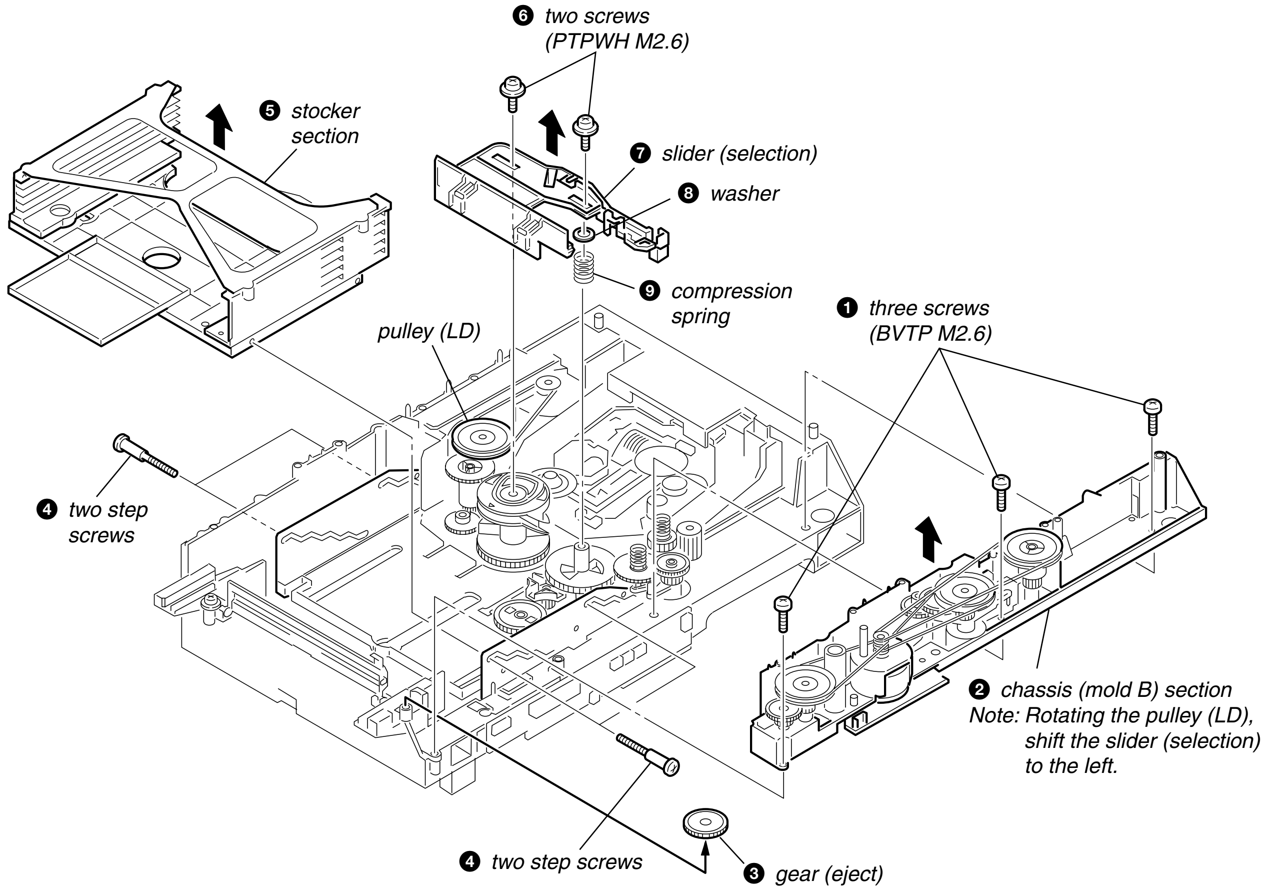
3-10. TRAY (SUB)

❶ *Rotating the pulley (LD), shift the slider (selection) in the arrow* Ⓐ *direction.*
❷ *Rotating the pulley (mode) in the arrow direction, adjust the tray (sub) to be removed.*
❸ *Rotating the pulley (LD), shift the slider (selection) in the arrow* Ⓑ *direction.*
❹ *Rotating the pulley (mode) in the arrow direction, remove the tray (sub) to be removed.*


slider (selection)
pulley (LD)
stocker
section
A
B
pulley (mode)
tray (sub)

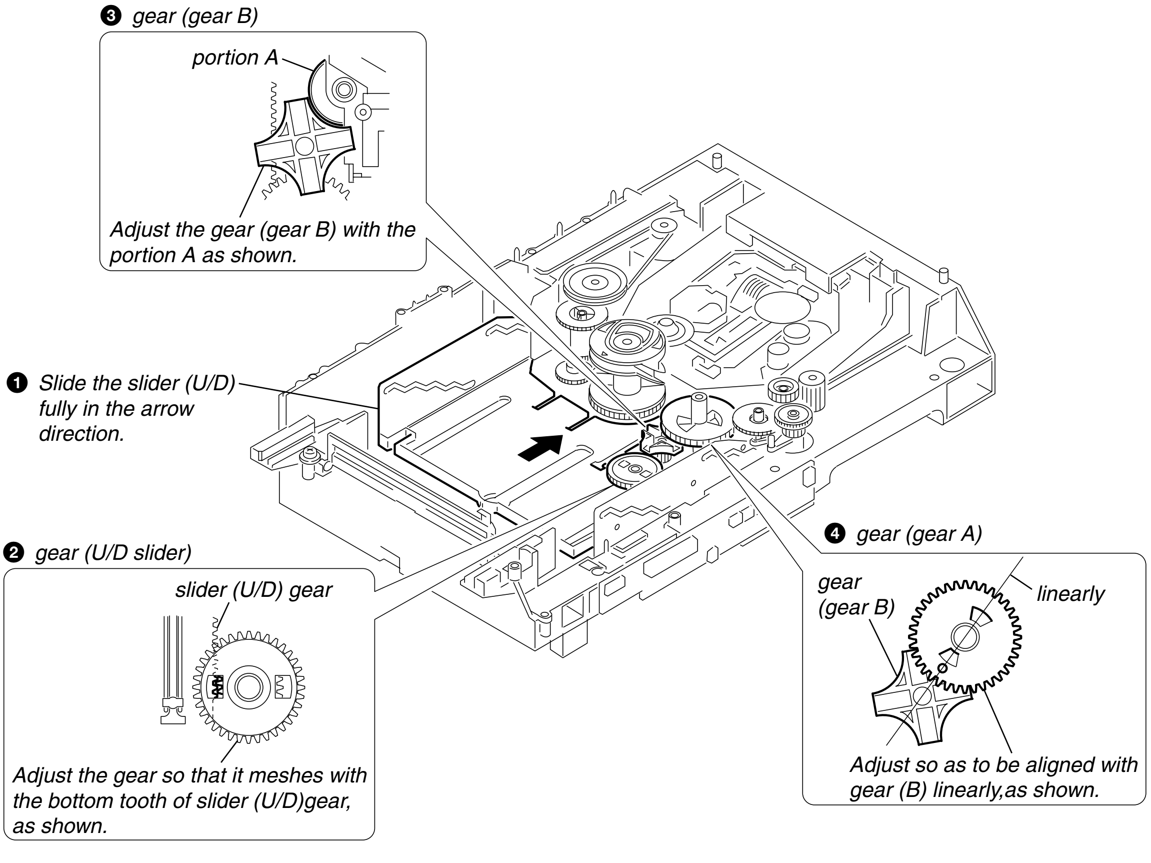
3-11. CHASSIS (MOLD B) SECTION, STOCKER SECTION AND SLIDER (SELECTION)

Note : In mounting the parts, refer to page 23 and 24.


❻ two screws (PTPWH M2.6)
❺ stocker section
❼ slider (selection)
❽ washer
❾ compression spring
pulley (LD)
❶ three screws (BVTP M2.6)
❹ two step screws
❷ chassis (mold B) section
❹ two step screws
❸ gear (eject)

Note: Rotating the pulley (LD), shift the slider (selection) to the left.

3-12. GEARS INSTALLATION

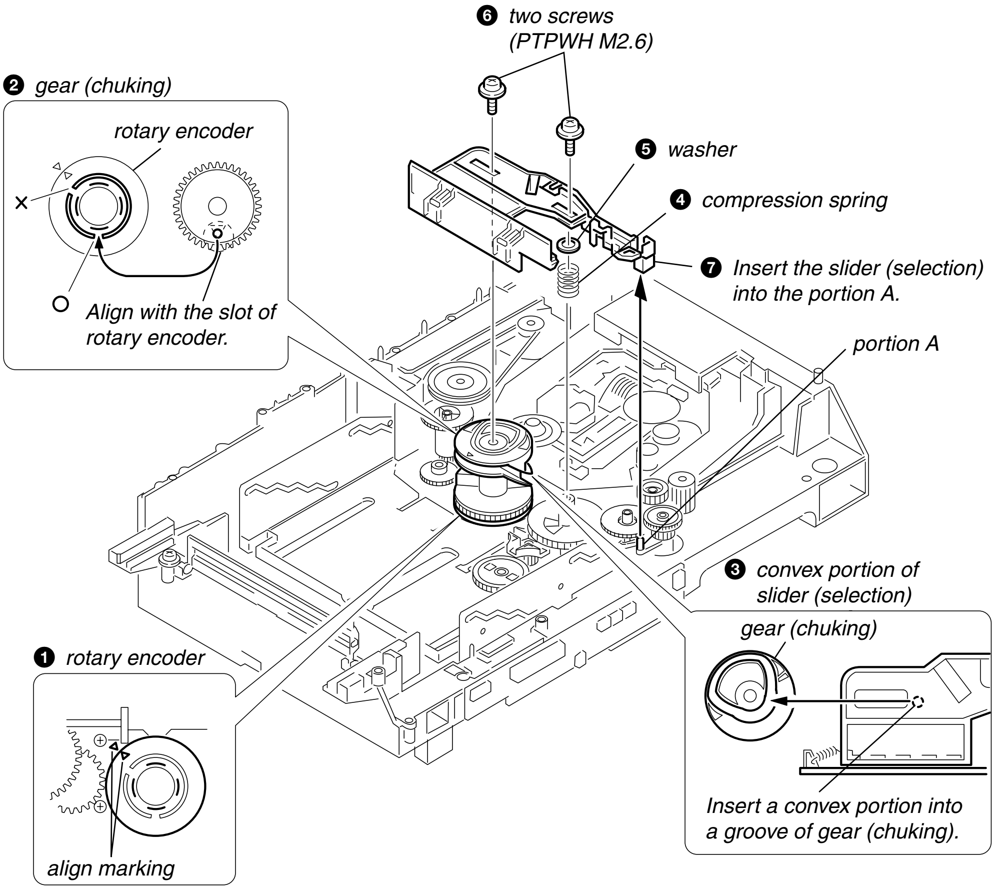

❸ gear (gear B)
portion A
❶ Slide the slider (U/D) fully in the arrow direction.
❷ gear (U/D slider)
slider (U/D) gear
❹ gear (gear A)
gear (gear B)
linearly

Adjust the gear (gear B) with the portion A as shown.

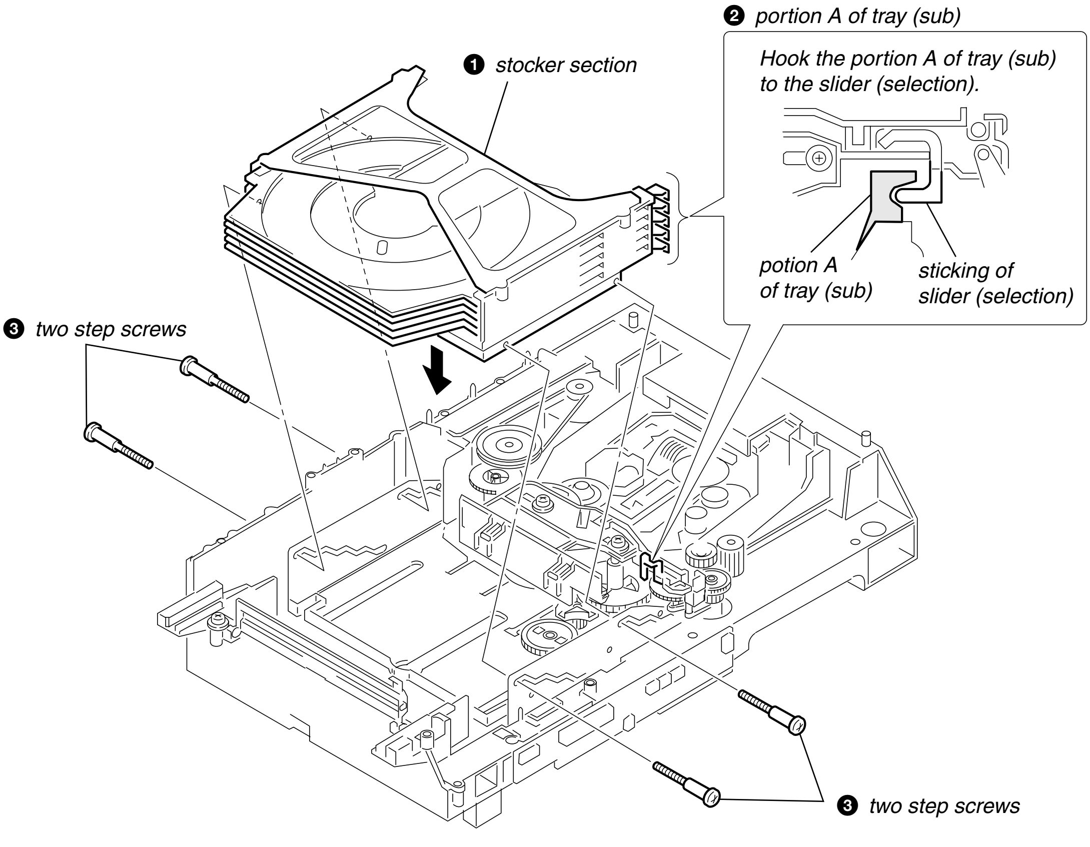
Adjust the gear so that it meshes with the bottom tooth of slider (U/D)gear, as shown.

Adjust so as to be aligned with gear (B) linearly,as shown.

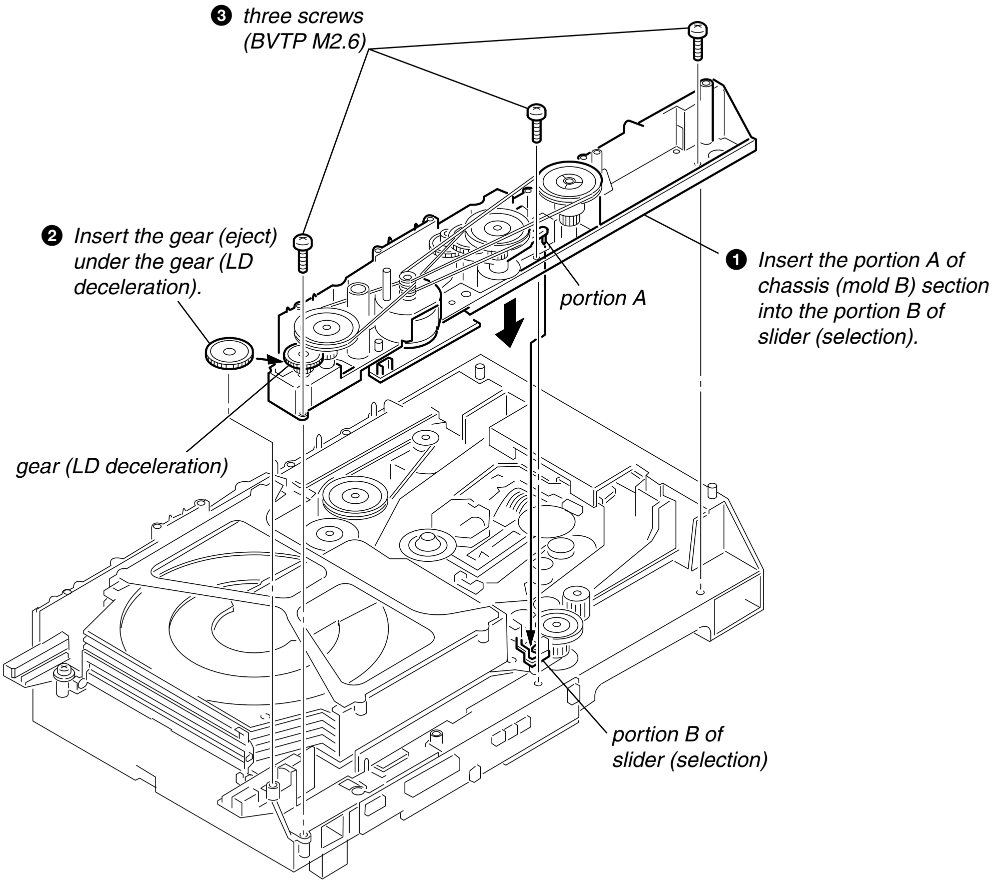
3-13. SLIDER (SELECTION) INSTALLATION


❻ two screws (PTPWH M2.6)
❷ gear (chuking)
rotary encoder
×
○
Align with the slot of rotary encoder.
❺ washer
❹ compression spring
❼ Insert the slider (selection) into the portion A.
portion A
❸ convex portion of slider (selection)
gear (chuking)
Insert a convex portion into a groove of gear (chuking).
❶ rotary encoder
align marking

3-14. STOCKER SECTION INSTALLATION


❷ portion A of tray (sub)
Hook the portion A of tray (sub) to the slider (selection).
potion A of tray (sub)
sticking of slider (selection)
❶ stocker section
❸ two step screws
❸ two step screws

3-15. CHASSIS (MOLD B) SECTION INSTALLATION



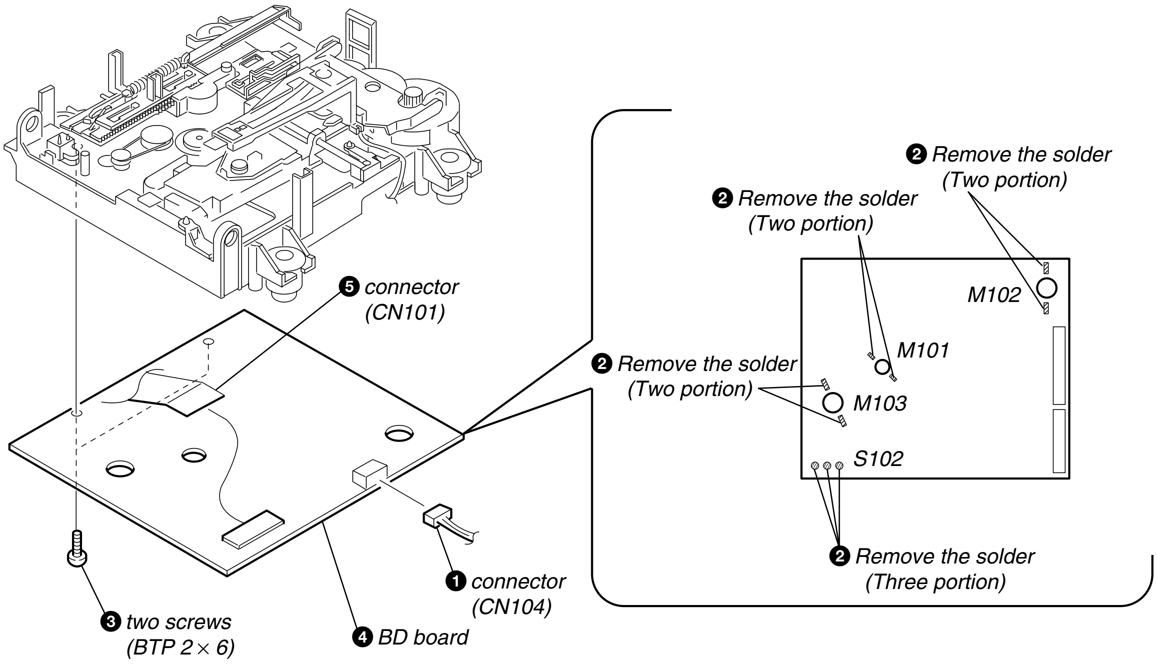
❸ three screws (BVTP M2.6)

❷ Insert the gear (eject) under the gear (LD deceleration).

❶ Insert the portion A of chassis (mold B) section into the portion B of slider (selection).

portion A
gear (LD deceleration)
portion B of slider (selection)

3-16. BD (MD) BOARD



❶ connector (CN104)

❷ Remove the solder (Two portion)

❷ Remove the solder (Two portion)

❷ Remove the solder (Two portion)

❷ Remove the solder (Three portion)

❸ two screws (BTP 2 × 6)

❹ BD board

❺ connector (CN101)

M102
M101
M103
S102

SECTION 4
TEST MODE

[MC Cold Reset]

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure:

1. Press three buttons ■, DISPLAY, and DISC 5 simultaneously.
2. The fluorescent indicator tube displays “COLD RESET” and the set is reset.

[CD Ship Mode]

- This mode moves the optical pick-up to the position durable to vibration. Use this mode when returning the set to the customer after repair.

Procedure:

1. Press I/⏻ button to turn the set ON.
2. Press V-GROOVE button and I/⏻ button simultaneously.
3. After the “STANDBY” display blinks six times, a message “LOCK” is displayed on the fluorescent indicator tube, and the CD ship mode is set.

[MC Hot Reset]

- This mode resets the set with the preset data kept stored in the memory. The hot reset mode functions same as if the power cord is plugged in and out.

Procedure:

1. Press three buttons ■, DISPLAY, and DISC 1 simultaneously.
2. The fluorescent indicator tube becomes blank instantaneously, and the set is reset.

[CD Service Mode]

- This mode can run the CD sled motor freely. Use this mode, for instance, when cleaning the optical pick-up.

Procedure:

1. Press I/⏻ button to turn the set ON.
2. Select the function “CD”.
3. Press three buttons ■, DISPLAY , and ⏏ 3 simultaneously.
4. The CD service mode is selected.
5. With the CD in stop status, turn the shuttle knob clockwise to move the optical pick-up to outside track, or turn the shuttle knob counter-clockwise to inside track.
6. To exit from this mode, perform as follows:
   1) Move the optical pick-up to the most inside track.
   2) Press three buttons in the same manner as step 2.

Note:
- Always move the optical pick-up to most inside track when exiting from this mode. Otherwise, a disc will not be unloaded.
- Do not run the sled motor excessively, otherwise the gear can be chipped.

[VACS ON/OFF Mode]

- This mode is used to switch ON and OFF the VACS (Variable Attenuation Control System).

Procedure:

Press the PUSH ENTER and ■ buttons simultaneously. The message “VACS OFF” or “VACS ON” appears.

[Change-over of AM Tuner Step between 9 kHz and 10 kHz]

- A step of AM channels can be changed over between 9 kHz and 10 kHz.

Procedure:

1. Press I/⏻ button to turn the set ON.
2. Select the function “TUNER”, and press TUNER/BAND button to select the BAND “AM”.
3. Press I/⏻ button to turn the set OFF.
4. Press MODE SELECT and I/⏻ buttons simultaneously, and the display of fluorescent indicator tube changes to “AM 9 k STEP” or “AM 10 k STEP”, and thus the channel step is changed over.

[GC Test Mode]

- This mode is used to check the software version, FL tube, LED, keyboard and VACS.

Procedure:

1. Press three buttons ■, DISPLAY, and DISC 2 simultaneously.
2. LEDs and fluorescent indicator tube are all turned on.
3. When you want to enter the software version display mode, press DISC 1. The model number and destination are displayed.
4. Each time DISC 1 is pressed, the display changes starting from MC version, GC version, VC version, CD version, CDM version, ST version, TC version, TA version, TM version and BR version in this order, and returns to the model number and destination display.
5. When DISC 3 is pressed while the version numbers are being displayed except model number and destination, year, month and day of the software creation appear. When DISC 3 is pressed again, the display returns to the software version display. When DISC 1 is pressed while year, month and day of the software creation are being displayed, the year, month and day of creation of the software versions are displayed in the same order of version display.
6. Press DISC 2 button, and the key check mode is activated.
7. In the key check mode, the fluorescent indicator tube displays “K 0 VO 0 STICK N”. Each time a button is pressed, “K 0” value increases. However, once a button is pressed, it is no longer taken into account.
   “VO 0” value increases like 1, 2, 3 ... if rotating VOLUME knob in “+” direction, or it decreases like 0, 9, 8 ... if rotating in “–” direction.
   Moving the stick changes the “STICK N” display.
   When moved up : “STICK ↑”
   When moved down : “STICK ↓”
   When moved to the left : “STICK ←”
   When moved to the right : “STICK →”
8. Also when DISC 3 is pressed after lighting of all LEDs and FL tubes, value of VACS appears.
9. To exit from this mode, press three buttons in the same manner as step 1, or disconnect the power cord.

[MC Test Mode]

• This mode is used to check operations of the respective sections of Amplifier, Tuner, CD and Tape.

Procedure:

1. Press the I/⏻ button to turn on the set.
2. Press the three buttons of ■, DISPLAY and DISC 3 simultaneously.
3. A message "TEST MODE" appears on the FL display tube.
4. When the multi-stick is moved up, GEQ increases to its maximum and a message "GEQ MAX" appears.
5. When the multi-stick is moved down, GEQ decreases to its minimum and a message "GEQ MIN" appears.
6. When the multi-stick is moved left or right, GEQ is set to flat and a message "GEQ FLAT" appears.
7. When the VOLUME control knob is turned clockwise even slightly, the sound volume increases to its maximum and a message "VOLUME MAX" appears for two seconds, then the display returns to the original display.
8. When the VOLUME control knob is turned counter-clockwise even slightly, the sound volume decreases to its minimum and a message "VOLUME MIN" appears for two seconds, then the display returns to the original display.
9. In the test mode, the default-preset channel is called even when the TUNER is selected and an attempt is made to call the preset channel that has been stored in memory, by operating the Shuttle knob. (It means that the memory is cleared.)
10. When CD is selected and press MODE SELECT, and press PUSH ENTER when "Set up Mode" is displayed.
    Press PUSH ENTER when "CD Set up?" is displayed.
    Move the stick left and right to display "CD Edit Start?", and press PUSH ENTER, the disc that is being chucked at this moment becomes the default setting. It means that the default disc only is accessed when any other discs are selected even though the display indication changes accordingly. At the same time, the ⏏1 to ⏏5 cannot be accepted. (It means that the tray motor and the turntable motor are disabled of their operation.)
11. When a tape is inserted in Deck B and recording is started, the input source function selects VIDEO automatically.
12. When ■ button is pressed to stop recording, the Tape (Deck) B is selected and tape is rewound using the ◀◀ button, tape is rewound, tape is stops at around the record-starting position and playback of the recorded portion of the tape is started. If PAUSE is inserted even once during recording, tape is rewound to the position around the PAUSE position and is played back.
13. When the HIGH-SPEED CD-MD SYNC Button is press during playback of Deck B, either normal speed or high speed can be selected by this button.
14. Select the desired loop by pressing MODE SELECT, and press PUSH ENTER when "Set up Mode" is displayed.
    Press PUSH ENTER when "CD Set up?" is displayed.
    Move the stick left and right to display "Tape Set Up?", and press PUSH ENTER.
    Press PUSH ENTER when "Direction Set Up?" is displayed.
    Move the stick left and right to display "Cycle?", and press PUSH ENTER.
    Insert a test tape AMS-110A or AMS-RO to Deck A.
15. Press the SYNC REC button to enter the AMS test mode.
16. After a tape is rewound first, the FF AMS is checked, and the mechanism is shut off after detecting the AMS signal twice.
17. Then the REW AMS is checked and the mechanism is shut off after detecting the AMS signal twice.
18. When the check is complete, a message of either OK or NG appears.
19. When you want to exit this mode, press the I/⏻ button twice. The cold reset is enforced at the same time.

[Aging Mode]

This mode can be used for operation check of CD section and tape deck section.

- If an error occurred:
  The aging operation stops and display status.
- If no error occurs:
  The aging operation continues repeatedly.

1. Operating method of Aging Mode

Turn on the main power and select "CD" of the function.

1) Set a disc in DISC1 tray. Select ALL DISC CONTINUE, and REPEAT OFF.
2) Load the tapes recording use into the decks A and B respectively.
3) Press three buttons ■ , DISPLAY , and DISC 4 simultaneously.
4) Aging operations of CD and tape are started at the same time.

• Tape Deck

1. The tape in deck A is rewound. "TAPE A AG-1" is displayed.
2. The FWD side of deck A is played for two minutes.
   "TAPE A AG-2" is displayed.
3. The tape in deck A is fast forwarded. "TAPE A AG-3" is displayed. Fast forward is carried out for 20 seconds or to the tape end.
4. The RVS side of deck A is played for two minutes.
   "TAPE A AG-4" is displayed.
5. The tape in deck A is rewound. "TAPE A AG-5" is displayed.
6. The FWD side of deck B is played for two minutes.
   "TAPE B AG-2" is displayed.
7. The tape in deck B is fast forwarded. "TAPE B AG-3" is displayed. Fast forward is carried out for 20 seconds or to the tape end.
8. The RVS side of deck B is played for two minutes.
   "TAPE B AG-4" is displayed.
9. The tape in deck A is rewound. "TAPE A AG-5" is displayed.
10. Repeated from step 2.

• CD

1. The tray rotates.
2. DISC 5 is chucked.
3. The TOC is read.
4. The first track is played for 3 seconds.
5. The last track is played for 3 seconds.
6. DISC 1 is open.
7. DISC 1 is close.
8. Repeated from step 2.

2. Ending the Aging Mode

1) End the Aging Mode with the power off.
2) To reset the CD error history, be sure to perform cold reset.

4-1. PRECAUTIONS FOR USE OF TEST MODE

- As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.
  Even if the MD ⏏ button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating.
  Therefore, it will be ejected while rotating.
  Be sure to press the CLEAR button while REC IT is lit, and press the MD ⏏ button while REC IT is off after the disc stops rotating.

4-1-1. Recording laser emission mode and operating buttons

- Continuous recording mode (CREC 1MODE) (C35)
- Laser power check mode (LDPWR CHECK) (C13)
- Laser power adjustment mode (LDPWR ADJUS) (C04)
- Iop check (Iop Compare) (C27)
- Iop value nonvolatile writing (Iop NV Save) (C06)
- Traverse (MO) check (EF MO CHECK) (C14)
- Traverse (MO) adjustment (EF MO ADJUS) (C07)
- When pressing the MD REC button.

4-2. SETTING THE TEST MODE

The following are two methods of entering the test mode.

Procedure 1: In the power ON state, set the function to MD, and while pressing the DISPLAY and ■ buttons together, press V-GROOVE.
When the test mode is set, “[Check]” will be displayed. Move the multi-stick to switch between the following three groups;
···⟷ Check ⟷ Service ⟷ Develop ⟷ ···.

Procedure 2: In the power ON state, set the function to MD, and while pressing the DISPLAY and ■ buttons together, press the NAME EDIT/CHARACTER button.
When the test mode is set, “AUTO CHECK” will be displayed. By setting the test mode using this method, only the “Check” group of method 1 can be executed.

NOTE: Do not use the test mode in the [Develop] group.
If used, the unit may not operate normally.
If the [Develop] group is set accidentally, press the CLEAR button while REC IT is lit, immediately to exit the [Develop] group.

4-3. EXITING THE TEST MODE

Press the MD ⏏ button while REC IT is off. The disc is ejected when loaded, and “Standby” display blinks, and the STANDBY state is set.

4-4. BASIC OPERATIONS OF THE TEST MODE

Operate using the multi-stick, PUSH ENTER button, MD REC MODE button, CLEAR button, NAME EDIT/CHARACTER button.

Function name	Function
CLEAR button (When REC IT is lit)	Cancel or move to top hierarchy
PUSH ENTER button	Set
Mulit stick (Left or Right)	Select
MD REC MODE button (When REC IT is lit)	Set submenu
NAME EDIT/CHARACTER button	Switching of button operations (REC IT lights up/goes off)

4-5. SELECTING THE TEST MODE

There are 26 types of test modes as shown below. The groups can be switched by moving the multi-stick. After selecting the group to be used, press the PUSH ENTER button. After setting a certain group, move the multi-stick to switche between these modes.
Refer to “Group” in the table for details selected.
All adjustments and checks during servicing can be performed in the test mode in the Service group.

NOTE: Do not use the test mode in the [Develop] group.
If used, the unit may not operate normally.
If the [Develop] group is set accidentally, press the CLEAR button while REC IT is lit, immediately to exit the [Develop] group.

Display	No.	Details	Mark	Group	
				Check	Service
AUTO CHECK	C01	Automatic self-diagnosis			○
Err Display	C02	Error history display, clear			○
TEMP ADJUS	C03	Temperature compensation offset adjustment			○
LDPWR ADJUS	C04	Laser power adjustment			○
Iop Write	C05	Iop data writing			○
Iop NV Save	C06	Writes current Iop value in read nonvolatile memory using microprocessor			○
EF MO ADJUS	C07	Traverse (MO) adjustment			○
EF CD ADJUS	C08	Traverse (CD) adjustment			○
FBIAS ADJUS	C09	Focus bias adjustment			○
AG Set (MO)	C10	Focus, tracking gain adjustment (MO)			○
AG Set (CD)	C11	Focus, tracking gain adjustment (CD)			○
TEMP CHECK	C12	Temperature compensation offset check		○	○
LDPWR CHECK	C13	Laser power check		○	○
EF MO CHECK	C14	Traverse (MO) check		○	○
EF CD CHECK	C15	Traverse (CD) check		○	○
FBIAS CHECK	C16	Focus bias check		○	○
ScurveCHECK	C17	S-curve check	×	○	
VERIFYMODE	C18	Nonvolatile memory check	×	○	
DETRK CHECK	C19	Detrack check	×	○	
0920 CHECK	C25	Most circumference check	×	○	
Iop Read	C26	Iop data display		○	○
Iop Compare	C27	Comparison with initial Iop value written in nonvolatile memory		○	○
ADJ CLEAR	C28	Initialization of nonvolatile memory for adjustment values			○
INFORMATION	C31	Display of microprocessor version, etc.		○	○
CPLAY1MODE	C34	Continuous playback mode		○	○
CREC 1MODE	C35	Continuous recording mode		○	○

- For details of each adjustment mode, refer to “6. Electrical Adjustments”.
  For details of “Err Display”, refer to “Self-Diagnosis Function” on page 2.
- If a different mode has been selected by mistake, press the CLEAR button while REC IT is lit, to exit that mode.
- Modes with (X) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the CLEAR button while REC IT is lit, to exit the mode immediately.

4-5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode
   ① Set the disc in the unit. (Whichever recordable discs or discs for playback only are available.)
   ② Move the multi-stick and display “CPLAY1MODE”(C34).
   ③ Press the PUSH ENTER button to change the display to “CPLAY1MID”.
   ④ When access completes, the display changes to “C = ⬚⬚⬚⬚ AD = ⬚⬚”.
   Note : The numbers “⬚” displayed show you error rates and ADER.
2. Changing the parts to be played back
   ① Press the PUSH ENTER button during continuous playback to change the display as below.
   “CPLAY1MID” → “CPLAY1OUT” → “CPLAY1IN”
   When pressed another time, the parts to be played back can be moved.
   ② When access completes, the display changes to “C = ⬚⬚⬚⬚ AD = ⬚⬚”.
   Note : The numbers “⬚” displayed show you error rates and ADER.
3. Ending the continuous playback mode
   ① Press the CLEAR button while REC IT is lit. The display will change to “CPLAY1MODE”(C34).
   ② To remove the disc, press the MD ⏏ button while REC IT is off.
   Note : The playback start addresses for IN, MID, and OUT are as follows.

IN	40h cluster
MID	300h cluster
OUT	700h cluster

4-5-2. Operating the Continuous Recording Mode (Use only when performing self-recording/palyback check.)

1. Entering the continuous recording mode
   ① Set a recordable disc in the unit.
   ② Move the multi-stick and display “CREC 1MODE” (C35).
   ③ Press the PUSH ENTER button to change the display to “CREC 1MID”.
   ④ When access completes, the display changes to “CREC1 (⬚⬚⬚⬚)” and **MD REC** lights up.
   Note : The numbers “⬚” displayed shows you the recording position addresses.
2. Changing the parts to be recorded
   ① When the PUSH ENTER button is pressed during continuous recording, the display changes as below.
   “CREC 1MID” → “CREC 1OUT” → “CREC 1IN”
   When pressed another time, the parts to be recorded can be changed. **MD REC** goes off.
   ② When access completes, the display changes to “CREC 1(⬚⬚⬚⬚)” and **MD REC** lights up.
   Note : The numbers “⬚” displayed shows you the recording position addresses.
3. Ending the continuous recording mode
   ① Press the CLEAR button while REC IT is lit. The display changes to “CREC 1MODE” (C35) and **MD REC** goes off.
   ② To remove the disc, press the MD ⏏ button while REC IT is off.
   Note 1 : The recording start addresses for IN, MID, and OUT are as follows.

IN	40h cluster
MID	300h cluster
OUT	700h cluster

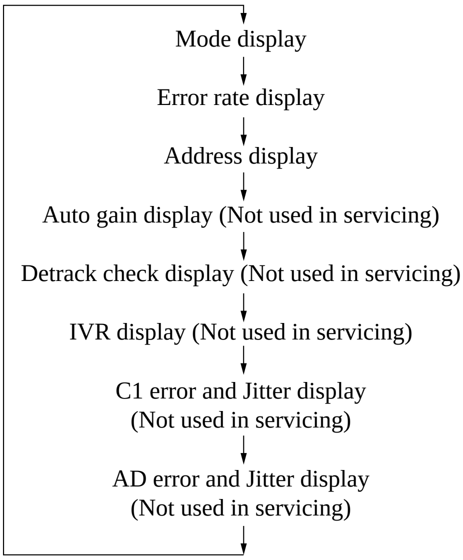
Note 2 : Press the CLEAR button while REC IT is lit can be used to stop recording anytime.
Note 3 : Do not perform continuous recording for long periods of time above 5 minutes.
Note 4 : During continuous recording, be careful not to apply vibration.

4-6. FUNCTIONS OF OTHER BUTTONS

Function	REC IT	Contents
PUSH ENTER	Lit	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF.
CLEAR	Off	Stops continuous playback and continuous recording.
▷▷ (FF)	Off	The sled moves to the outer circumference only when this is pressed.
◁◁ (FR)	Off	The sled moves to the inner circumference only when this is pressed.
REC MODE	Off	Switches between the pit and groove modes when pressed.
REC	Off	Switches the spindle servo mode (CLV S ⟷ CLV A).
HIGH SPEED CD-MD	Lit	Switches the displayed contents each time the button is pressed.
EJECT	Off	Ejects the disc.
		Exits the test mode. (When No disc)

4-7. TEST MODE DISPLAYS

Each time the HIGH SPEED CD-MD SYNC button is pressed, the display changes in the following order.
When CPLAY and CREC are started, the display will forcibly be switched to the error rate display as the initial mode.


Mode display
Error rate display
Address display
Auto gain display (Not used in servicing)
Detrack check display (Not used in servicing)
IVR display (Not used in servicing)
C1 error and Jitter display (Not used in servicing)
AD error and Jitter display (Not used in servicing)

1. Mode display

Displays “TEMP ADJUS”(C03), “CPLAY1MODE”(C34), etc.

2. Error rate display

Displays the error rate in the following way.

C1 = □□□□ AD = □□
C1 = Indicates the C1 error.
AD = Indicates ADER.

3. Address display

The address is displayed as follows. (MO:recordable disc, CD:playback only disc)

h = □□□□ s = □□□□ (MO pit and CD)
h = □□□□ a = □□□□ (MO groove)
h = Indicates the header address.
s = Indicates the SUBQ address.
a = Indicates the ADIP address.

Note: “–” is displayed when the address cannnot be read.

4-8. MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
LP2	Servo ON	Servo OFF
LP4	Tracking servo OFF	Tracking servo ON
MD REC	Recording mode ON	Recording mode OFF
TRACK	CLV low speed mode	CLV normal mode
L.SYNC	ABCD adjustment completed	
OVER	Tracking offset cancel ON	Tracking offset cancel OFF
TOC	Tracking auto gain OK	
REPEAT	Focus auto gain OK	
MD PLAY (LED)	Pit	Groove
DISC	High reflection	Low reflection
x1	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

4-9. AUTOMATIC SELF-DIAGNOSIS FUNCTION

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up.
To perform this test mode, the laser power must first be checked.
Perform AUTO CHECK after the laser power check and Iop check.

Procedure

1. Press the PUSH ENTER button. If "LDPWR" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop compare, and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly.
   "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
3. If a disk is loaded at step 2, the check will start automatically.
4. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
   When "06 CHECK" completes, the disc loaded at step 2 will be ejected. "DISC IN" will be displayed. Load the check disc (MD) TDYS-1.
5. When the disc is loaded in step 4, the check will automatically be resumed from "07 CHECK".
6. After completing to test item 12, check OK or NG will be displayed. If all items are OK, "CHECK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

When "CHECK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.
When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

4-10. INFORMATION

Display the software version.

Procedure

1. If displayed as "INFORMATION", press the PUSH ENTER button.
2. The software version will be displayed.
3. Press the CLEAR button while REC IT is lit to end this mode.

4-11. WHEN MEMORY NG IS DISPLAYED

If the nonvolatile memory data is abnormal, "E001"/"MEMORY NG" will be displayed so that the MD deck does not continue operations.
In this case, set the test mode promptly and perform the following procedure.

Procedure

1. Set the test mode. (Refer to 4-2.)
2. Normally a message for selecting the test mode will be displayed. However if the nonvolatile memory is abnormal, the following will be displayed. "INIT EEP?"
3. Press the ■ button and MD ⏏ button together while REC IT is off.
4. Move the multi-stick and select MDM-7B.
5. Press the MD REC MODE button while REC IT is lit. If the nonvolatile memory is successfully overwritten, the normal test mode will be set and a message to select the test mode will be displayed.

SECTION 5
MECHANICAL ADJUSTMENTS

Precaution

1. Clean the following parts with a denatured alcohol-moistened swab:

record/playback heads	pinch rollers
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	3.04 – 6.96 N • m (31 to 71 g • cm) (0.43 – 0.98 oz • inch)
FWD back tension	CQ-102C	0.20 – 0.58 N • m (2 to 6 g • cm) (0.02 – 0.08 oz • inch)
REV	CQ-102RC	3.04 – 6.96 N • m (31 to 71 g • cm) (0.43 – 0.98 oz • inch)
REV back tension	CQ-102RC	0.20 – 0.58 N • m (2 to 6 g • cm) (0.02 – 0.08 oz • inch)
FF/REW	CQ-201B	6.97 – 14.02 N • m (71 to 143 g • cm) (0.98 – 1.99 oz • inch)
FWD tension	CQ-403A	0.98 N • m or more (100 g or more) (3.53 oz or more)
REV tension	CQ-403R	0.98 N • m or more (100 g or more) (3.53 oz or more)

SECTION 6
ELECTRICAL ADJUSTMENTS

DECK SECTION **0 dB=0.775V**

1. Demagnetize the record/playback head with a head demagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-CH.
7. Switches and controls should be set as follows unless otherwise specified.

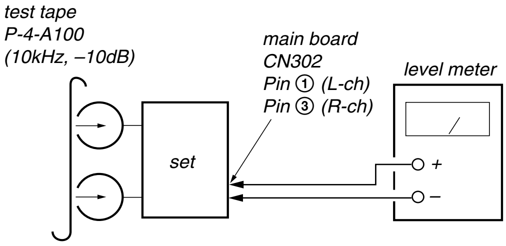
Tape	Signal	Used for
P-4-A100	10 kHz, –10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300	315 Hz, 0 dB	Level Adjustment

Record/Playback Head Azimuth Adjustment (Deck A, Deck B)

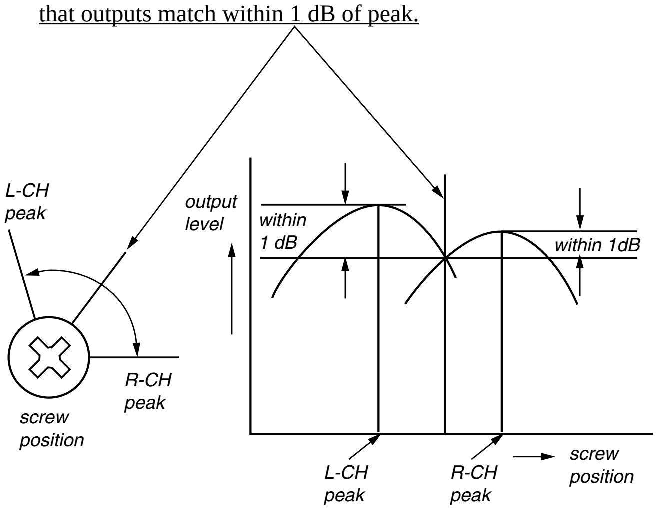
Note: Perform this adjustments for both decks.

Procedure:

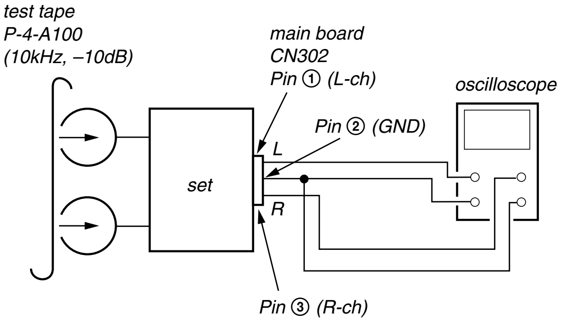
1. Mode : Playback

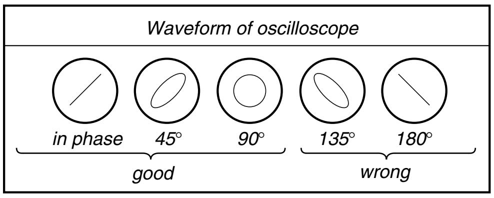


2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.



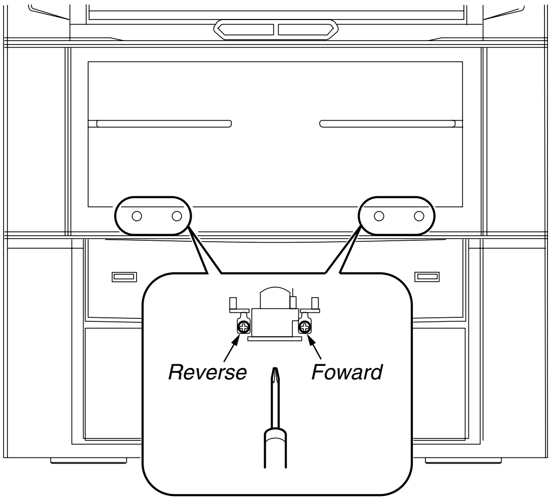
3. Mode: Playback


test tape
P-4-A100
(10kHz, –10dB)
main board
CN302
Pin ① (L-ch)
oscilloscope
Pin ② (GND)
L
set
R
Pin ③ (R-ch)


Waveform of oscilloscope
in phase
45°
90°
135°
180°
good
wrong

4. After the adjustments, apply suitable locking compound to the parts adjusted.

Adjustment Location: Playback Head (Deck A)
Record/Playback/Erase Head (Deck B)


Reverse
Foward

Tape Speed Adjustment (Deck A)

Note: Set the test mode using the following method and begin tape speed adjustment.
In the test mode, the speed will switch to double speed or normal speed each time the HIGH-SPEED CD-MD SYNC button is pressed.

Procedure:
With the power turned ON, press the ■ button, DISPLAY button, and DISC 3 button simultaneously.
(The “VOLUME” on the fluorescent display tube will blink while in the test mode.)
To exit the test mode, press the I/⏻ button.

1. Insert the WS-48B into deck B.
2. Press the ▷ button of deck B.
3. Press the HIGH-SPEED CD-MD SYNC button and play the tape at double speed.
4. Adjust RV1001 of the LEAF SW board so that the reading of the frequency counter becomes 6000 ± 180 Hz.
5. Press the HIGH-SPEED CD-MD SYNC button and play the tape at normal speed.
6. Adjust RV1002 of the LEAF SW board so that the reading of the frequency counter becomes 3000 ± 90 Hz.
7. Press the I/⏻ button, after the turned ON.
8. Insert the WS-48B into deck A, and insert the normal tape into deck B.
9. Press the SYNC REC button and display "TAPE A → B HIGH-SPEED" and then press the REC button to start recording.
10. Press the ■ button.
11. Press the ▷ button of deck B and check the reading of frequency counter becomes 3000 ± 90 Hz.

Adjustment Location: LEAF SW board

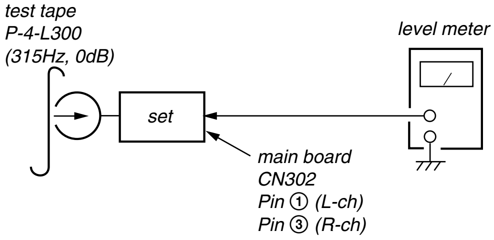
Sample Value of Wow and flutter

W.RMS (JIS) less than 0.3%
(test tape: WS-48B)

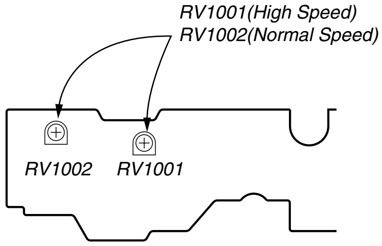
Playback Level Adjustment (Deck A, Deck B)

Procedure:
Mode: Playback
Deck A is RV311 (L-CH) and RV411 (R-CH), deck B is RV301 (L-CH) and RV401 (R-CH)
so that adjustment within the following adjustment level.

Adjustment level:
CN302 playback level: 301.5 to 338.3 mV (–8.2 to –7.2 dB)
level difference between the channels: within ± 0.5 dB
Adjustment Location: AUDIO board


test tape
P-4-L300
(315Hz, 0dB)
level meter
set
main board
CN302
Pin ① (L-ch)
Pin ③ (R-ch)

Adjustment Location [LEAF SW BOARD]


RV1001(High Speed)
RV1002(Normal Speed)
RV1002
RV1001

Record Bias Adjustment (Deck B)

Procedure:

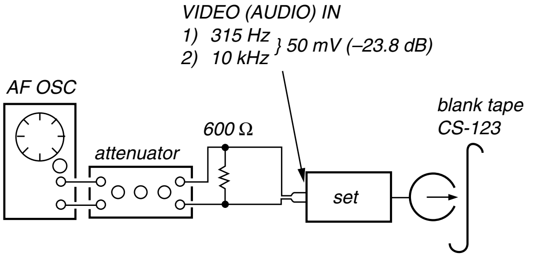
INTRODUCTION

When set to the test mode performed in **Tape Speed Adjustment**, when the tape is rewound after recording, the “REC memory mode” which rewinds only the recorded portion and playback is set.

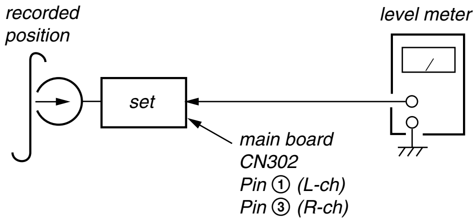
This “REC memory mode” is convenient for performing this adjustment. During recording, the input signal FUNCTION will automatically switch to VIDEO.

(After recording, press the ◀◀ button without stopping will return to the position where recording was started.)

1. Press FUNCTION button to select VIDEO. (This step is not necessary if the above test mode has already been set.)
2. Insert a tape into deck B, press the TAPE REC PAUSE/START button, and then press the ▷ button to start recording.
3. Mode: Record


VIDEO (AUDIO) IN
1) 315 Hz
2) 10 kHz
} 50 mV (–23.8 dB)
AF OSC
attenuator
600 Ω
blank tape
CS-123
set

4. Mode: Playback


recorded
position
set
level meter
main board
CN302
Pin ① (L-ch)
Pin ③ (R-ch)

5. Confirm playback the signal recorded in step 2 become adjustment level as follows.
   If these levels do not adjustment level, adjust the RV341 (L-CH) and RV441 (R-CH) on the AUDIO board to repeat steps 3 and 4.

Adjustment level: The playback output of 10 kHz level difference against 315 Hz reference should be 0 ± 0.5 dB.

Adjustment Location: AUDIO board

Record Level Adjustment (Deck B)

Procedure:

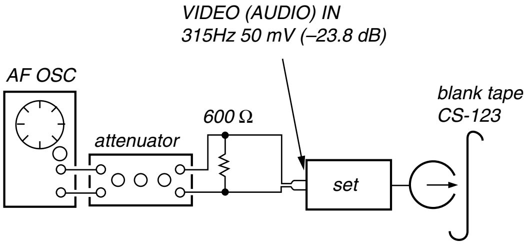
INTRODUCTION

When set to the test mode performed in **Tape Speed Adjustment**, when the tape is rewound after recording, the “REC memory mode” which rewinds only the recorded portion and playback is set.

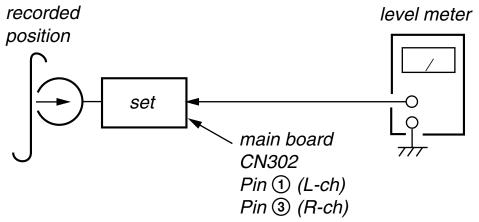
This “REC memory mode” is convenient for performing this adjustment. During recording, the input signal FUNCTION will automatically switch to VIDEO.

(After recording, press the ◀◀ button without stopping will return to the position where recording was started.)

1. Press FUNCTION button to select VIDEO. (This step is not necessary if the above test mode has already been set.)
2. Insert a tape into deck B, press the TAPE REC PAUSE/START button, and then press the ▷ button to start recording.
3. Mode: Record


VIDEO (AUDIO) IN
315Hz 50 mV (–23.8 dB)
AF OSC
attenuator
600 Ω
blank tape
CS-123
set

4. Mode: Playback

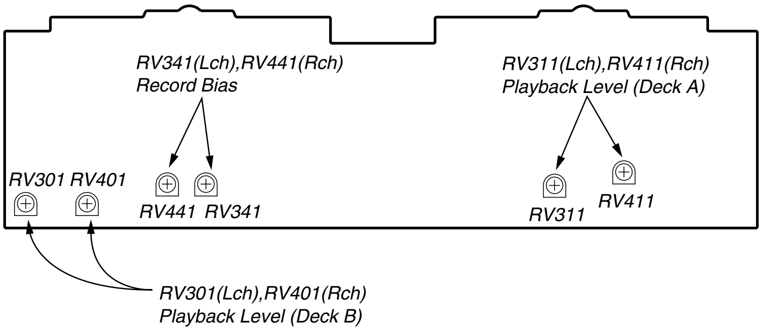

recorded
position
set
level meter
main board
CN302
Pin ① (L-ch)
Pin ③ (R-ch)

5. Confirm playback the signal recorded in step 2 become adjustment level as follows.
   If these levels do not adjustment level, adjust the RV301 (L-CH) and RV351 (R-CH) on the MAIN board to repeat steps 3 and 4.

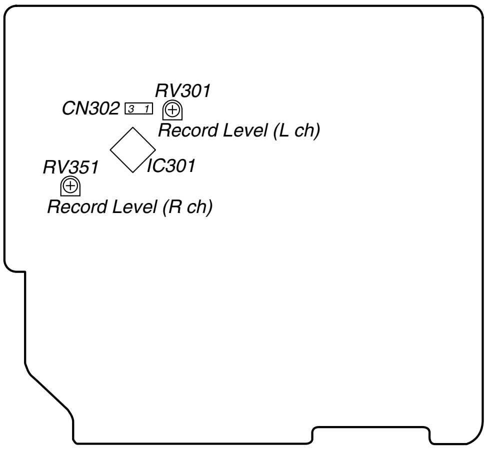
Adjustment level:
CN302 playback level: 47.2 to 53.0 mV (–24.3 to –23.3 dB)

Adjustment Location: MAIN board

Adjustment Location:
[AUDIO BOARD]


RV341(Lch),RV441(Rch)
Record Bias
RV311(Lch),RV411(Rch)
Playback Level (Deck A)
RV301 RV401
RV441 RV341
RV311
RV411
RV301(Lch),RV401(Rch)
Playback Level (Deck B)

[MAIN BOARD]

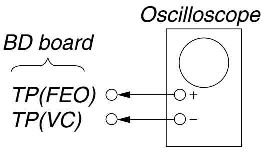

CN302
3 1
RV301
Record Level (L ch)
IC301
RV351
Record Level (R ch)

CD SECTION

Note :

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

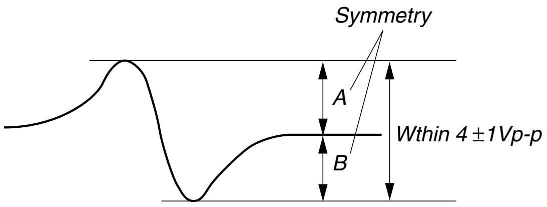
S-Curve Check


Oscilloscope
BD board
TP(FEO)
TP(VC)
+
–

Procedure :

1. Connect oscilloscope to TP (FEO).
2. Connect between TP (FEI) and TP (VC) by lead wire.
3. Connect between TP (AGCCON) and TP (GND) by lead wire.
4. Turn I/⏻ button on.
5. Load a disc (YEDS-18) and actuate the focus search. (In consequence of open and close the disc tray, actuate the focus search)
6. Confirm that the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 4 ±1 Vp-p.

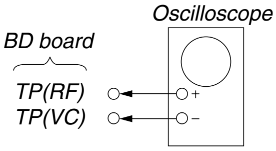
S-curve waveform


Symmetry
A
B
Wthin 4 ±1Vp-p

7. After check, remove the lead wire connected in step 2 and 3.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

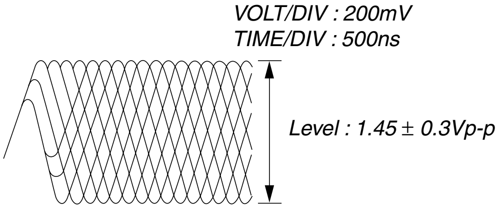

Oscilloscope
BD board
TP(RF)
TP(VC)
+
–

Procedure :

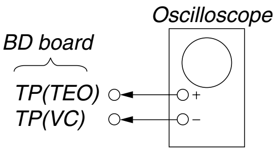
1. Connect oscilloscope to TP (RF).
2. Connect between TP (AGCCON) and TP (GND) by lead wire.
3. Turned I/⏻ button on.
4. Load a disc (YEDS-18) and playback.
5. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
6. After check, remove the lead wire connected in step 2.

Note : Clear RF signal waveform means that the shape " ◊ " can be clearly distinguished at the center of the waveform.

RF signal waveform


VOLT/DIV : 200mV
TIME/DIV : 500ns
Level : 1.45 ± 0.3Vp-p

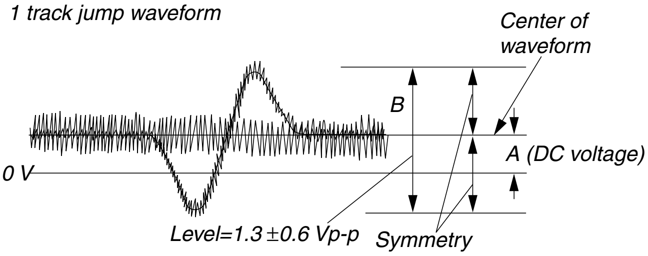
E-F Balance (1 Track jump) Check


Oscilloscope
BD board
TP(TEO)
TP(VC)
+
–

Procedure :

1. Connect oscilloscope to TP (TEO) and TP (VC).
2. Turned I/⏻ button on.
3. Load a disc (YEDS-18) and playback the number five track.
4. Press the ►II button. (Becomes the 1 track jump mode.)
5. Confirm that the level B and A (DC voltage) on the oscilloscope waveform.

1 track jump waveform

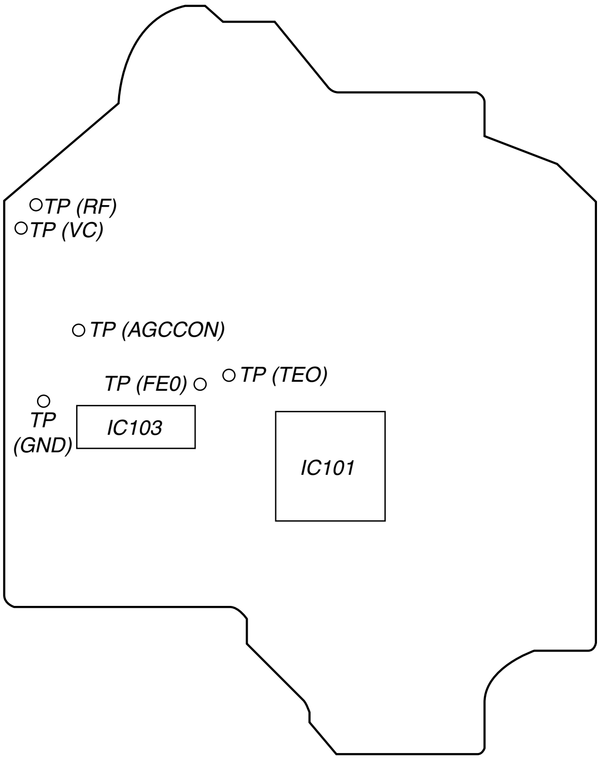

Center of waveform
B
A (DC voltage)
0 V
Level=1.3 ±0.6 Vp-p
Symmetry

Specified level: $\frac{A}{B} \times 100$ = less than ± 22 %

6. After check, remove the lead wire connected in step 1.

Adjustment Location:

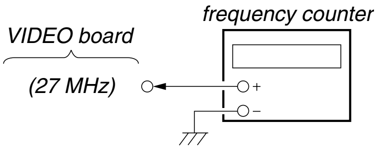
[BD (CD) BOARD] (Conductor Side)


TP (RF)
TP (VC)
TP (AGCCON)
TP (FE0)
TP (TEO)
TP (GND)
IC103
IC101

VIDEO SECTION

FREQUENCY ADJUSTMENT

Connection:

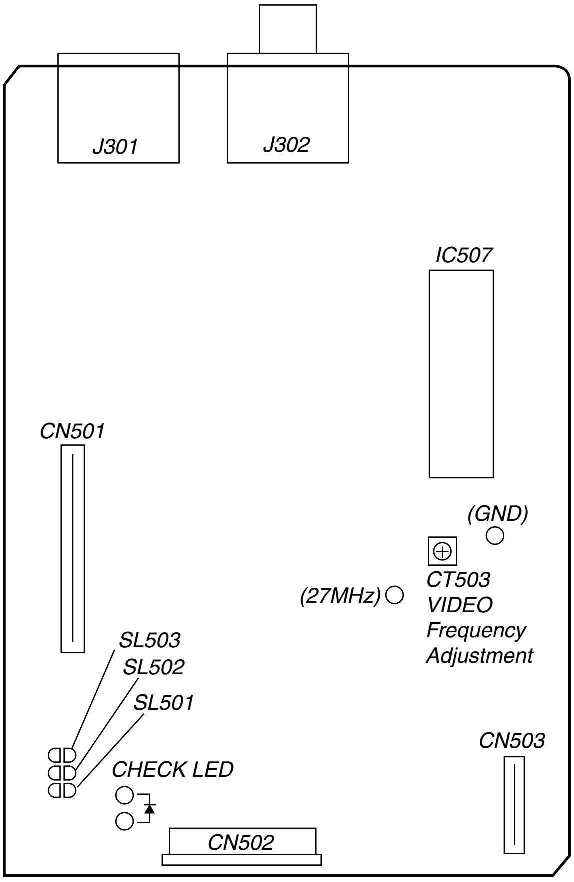

frequency counter
VIDEO board
(27 MHz)
+
–

Procedure:

1. Connect the frequency counter to check point of the VIDEO board.
2. Turned I/⏻ button switch on.
3. Press the FUNCTION button to select the CD.
4. Adjust CT503 on the VIDEO board so that the frequency counter reading 27.0 MHz ± 80 Hz at stop status.

Adjustment Location:

[VIDEO BOARD] (SIDE A)

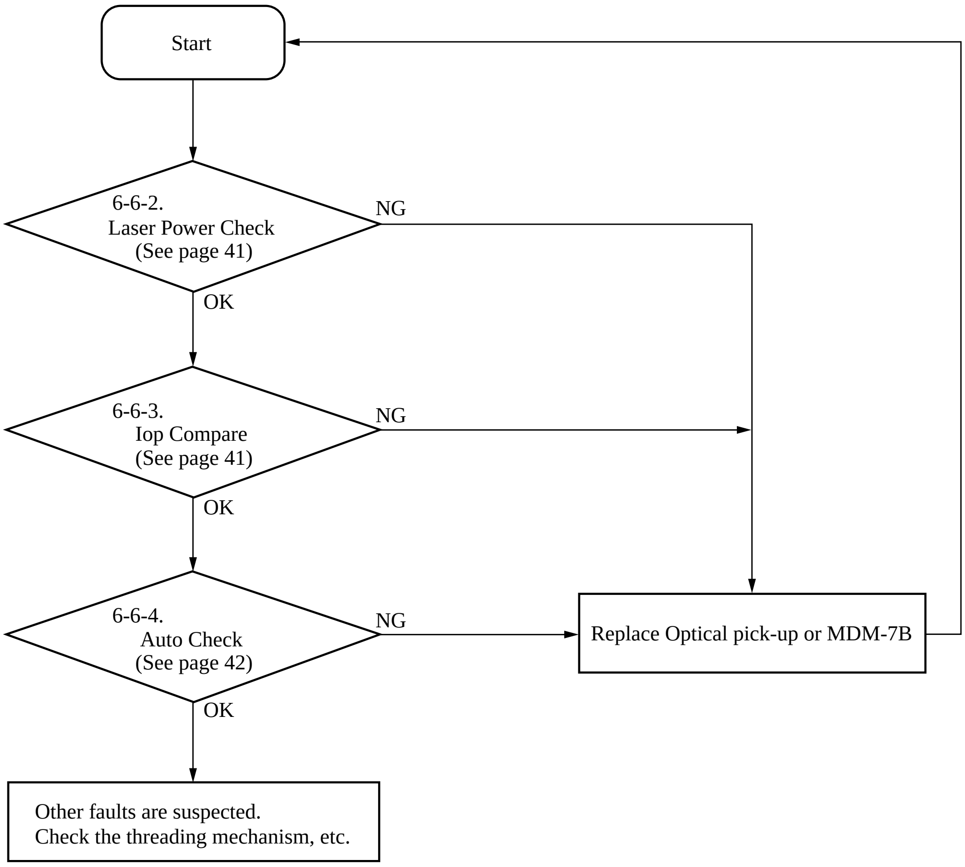

J301
J302
IC507
CN501
(GND)
(27MHz)
CT503
VIDEO
Frequency
Adjustment
SL503
SL502
SL501
CHECK LED
CN503
CN502

MD SECTION

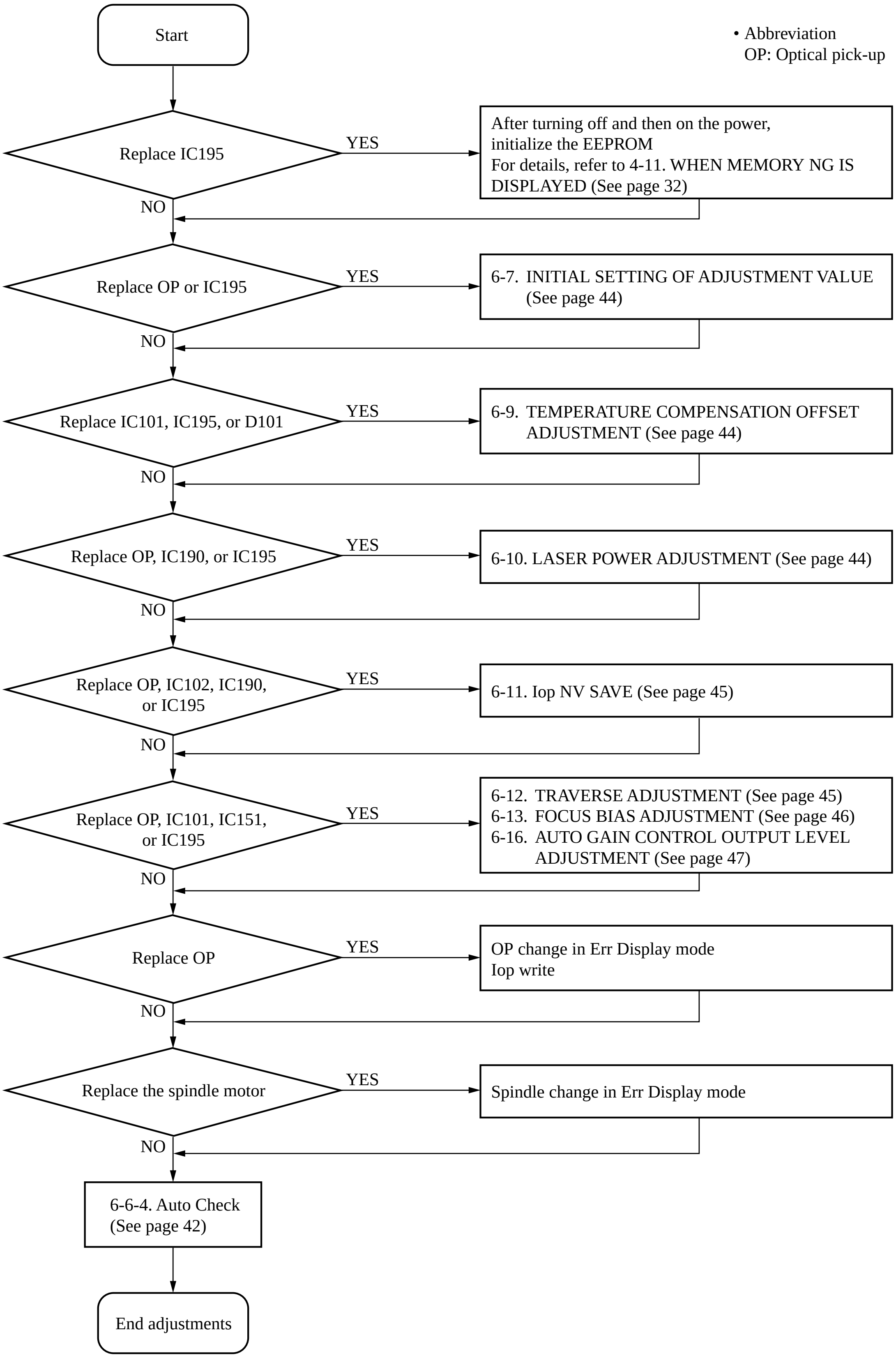
6-1. PARTS REPLACEMENT AND ADJUSTMENT

If malfunctions caused by Optical pick-up such as sound skipping are suspected, follow the following check.

Check before replacement


Start
6-6-2.
Laser Power Check
(See page 41)
NG
OK
6-6-3.
Iop Compare
(See page 41)
NG
OK
6-6-4.
Auto Check
(See page 42)
NG
OK
Replace Optical pick-up or MDM-7B
Other faults are suspected.
Check the threading mechanism, etc.

Adjustment flow


• Abbreviation
OP: Optical pick-up

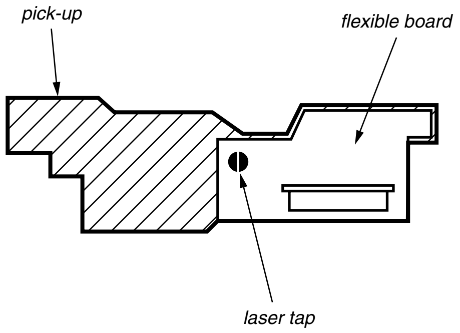
Start
Replace IC195
YES
After turning off and then on the power, initialize the EEPROM For details, refer to 4-11. WHEN MEMORY NG IS DISPLAYED (See page 32)
NO
Replace OP or IC195
YES
6-7. INITIAL SETTING OF ADJUSTMENT VALUE (See page 44)
NO
Replace IC101, IC195, or D101
YES
6-9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT (See page 44)
NO
Replace OP, IC190, or IC195
YES
6-10. LASER POWER ADJUSTMENT (See page 44)
NO
Replace OP, IC102, IC190, or IC195
YES
6-11. Iop NV SAVE (See page 45)
NO
Replace OP, IC101, IC151, or IC195
YES
6-12. TRAVERSE ADJUSTMENT (See page 45)
6-13. FOCUS BIAS ADJUSTMENT (See page 46)
6-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT (See page 47)
NO
Replace OP
YES
OP change in Err Display mode
Iop write
NO
Replace the spindle motor
YES
Spindle change in Err Display mode
NO
6-6-4. Auto Check (See page 42)
End adjustments

6-2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

6-3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-260B/J1N)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Optical pick-up flexible board

6-4. PRECAUTIONS FOR ADJUSTMENTS

1) When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
2) Set the test mode when performing adjustments.
   After completing the adjustments, exit the test mode.
   Perform the adjustments and checks in “group S” of the test mode.
3) Perform the adjustments to be needed in the order shown.
4) Use the following tools and measuring devices.
   - Check Disc (MD) TDYS-1
     (Parts No. 4-963-646-01)
   - Test Disk (MDW-74/GA-1) (Parts No. 4-229-747-01)
   - Laser power meter LPM-8001 (Parts No. J-2501-046-A)
     or
     MD Laser power meter 8010S (Parts No. J-2501-145-A)
   - Oscilloscope (Measure after performing CAL of prove.)
   - Digital voltmeter
   - Thermometer
   - Jig for checking BD (MD) board waveform
     (Parts No. : J-2501-196-A)
5) When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope.
   (VC and ground will become short-circuited.)
6) Using the above jig enables the waveform to be checked without the need to solder.
   (Refer to Servicing Note on page 9.)
7) As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

Adjustment	Parts to be replaced						
	Optical Pick-up	IC101	IC102	IC151	IC190	IC195	D101
6-7. Initial setting of adjustment values	○	×	×	×	×	○	×
6-8. Recording and displaying the Iop information	○	×	×	×	×	○	×
6-9. Temperature compensation offset adjustment	×	○	×	×	×	○	○
6-10. Laser power adjustment	○	×	×	×	○	○	×
6-11. Iop NV Save	○	×	○	×	○	○	×
6-12. Traverse adjustment	○	○	×	○	×	○	×
6-13. Focus bias adjustment	○	○	×	○	×	○	×
6-16. Auto gain control output level adjustment	○	○	×	○	×	○	×
6-6-4. Auto Check	○	○	×	○	○	○	×

6-5. USING THE CONTINUOUSLY RECORDED DISC

* This disc is used in focus bias adjustment and error rate check. The following describes how to create a continuous recording disc.

1. Insert a disc (blank disc) commercially available.
2. Move the multi-stick and display “CREC 1MODE”(C35).
3. Press the PUSH ENTER button again to display “CREC 1MID”. Display “CREC (0300)” and start to recording.
4. Complete recording within 5 minutes.
5. Press the CLEAR button while REC IT is lit and stop recording.
6. Press the MD ⏏ button while REC IT is off and remove the disc.

The above has been how to create a continuous recorded data for the focus bias adjustment and error rate check.

Note :

- Be careful not to apply vibration during continuous recording.

6-6. CHECKS PRIOR TO REPAIRS

These checks are performed before replacing parts according to “approximate specifications” to determine the faulty locations. For details, refer to “Checks Prior to Parts Replacement and Adjustments” (See page 11).

6-6-1. Temperature Compensation Offset Check

When performing adjustments, set the internal temperature and room temperature to 22 to 28ºC.

Checks cannot be performed properly if performed after some time from power ON due to the rise in the temperature of the IC and diode, etc. So, perform the checks again after waiting some time.

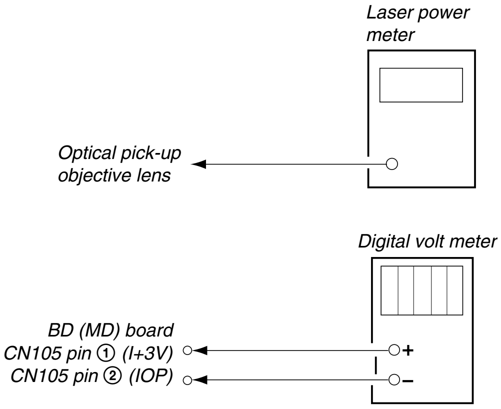
Checking Procedure:

1. Move the multi-stick to display “TEMP CHECK”(C12).
2. Press the PUSH ENTER button.
3. “T=@@(##) [OK]” should be displayed. If “T=@@ (##) [NG]” is displayed, it means that the results are bad.
   (@@ indicates the current value set, and ## indicates the value written in the non-volatile memory.)

6-6-2. Laser Power Check

Before checking, check the Iop value of the optical pick-up.
(Refer to 6-8. Recording and Displaying the Iop Information.)

Connection :

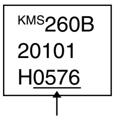


Checking Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (If cannot set properly, press the ◀◀ or ▶▶ button while REC IT is off and move the optical pick-up.)
   Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (IOP).
2. Then, move the multi-stick and display “LDPWR CHECK” (C13).
3. Press the PUSH ENTER button once and display “LD 0.9 mW $ ⬚⬚”. Check that the reading of the laser power meter become 0.82 to 0.91 mW.
4. Press the PUSH ENTER button once more and display “ LD 7.0 mW $ ⬚⬚”. Check that the reading the laser power meter and digital volt meter satisfy the specified value.

Specified Value :

Laser power meter reading : 7.0 ± 0.1 mW
Digital voltmeter reading : Optical pick-up displayed value ± 10%



(For details of the method for checking this value, refer to “6-8. Recording and Displaying the Iop Information”.)

Iop = 57.6 mA in this case
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

(Optical pick-up label)

5. Press the CLEAR button while REC IT is lit and display “LDPWR CHECK”(C13) and stop the laser emission.
   (The CLEAR button while REC IT is lit, it is effective at all times to stop the laser emission.)

Note 1: After step 4, each time the PUSH ENTER button is pressed, the display will be switched between “LD 0.7 mW $ ⬚⬚”, “LD 6.2 mW $ ⬚⬚”, and “LD Wp $ ⬚⬚”. Nothing needs to be performed here.

6-6-3. Iop Compare

The current Iop value at laser power 7 mw output and reference Iop value (set at shipment) written in the nonvolatile memory are compared, and the rate of increase/decrease will be displayed in percentage.

Note: Perform this function with the optical pick-up set at room temperature.

Procedure

1. Move the multi-stick to display “Iop Compare”(C27).
2. Press the PUSH ENTER button and start measurements.
3. When measurements complete, the display changes to “±xx%yy”.
   xx is the percentage of increase/decrease, and OK or NG is displayed at yy to indicate whether the percentage of increase/decrease is within the allowable range.
4. Press the CLEAR button to end while REC IT is lit.

6-6-4. Auto Check

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up. To perform this test mode, the laser power must first be checked. Perform Auto Check after the laser power check and Iop compare.

Procedure

1. Press the PUSH ENTER button. If “LDPWR” is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop compare, and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly. “DISC IN” will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
3. If a disk is loaded at step 2, the check will start automatically.
4. When “XX CHECK” is displayed, the item corresponding to XX will be performed.
   When “06 CHECK” completes, the disc loaded at step 2 will be ejected. “DISC IN” will be displayed. Load the check disc (MD) TDYS-1.
5. When the disc is loaded, the check will automatically be resumed from “07 CHECK”.
6. After completing to test item 12, check OK or NG will be displayed. If all items are OK, “CHECK ALL OK” will be displayed. If any item is NG, it will be displayed as “NG:xxxx”.

When “CHECK ALL OK” is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.
When displayed as “NG:xxxx”, it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

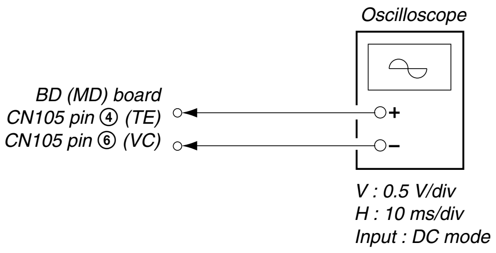
6-6-5. Other Checks

All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

6-6-6. Traverse Check
6-6-7. Focus Bias Check
6-6-8. C PLAY Check
6-6-9. Self-Recording/Playback Check

6-6-6. Traverse Check

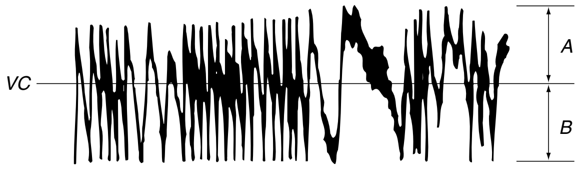
Connection :



Checking Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD (MD) board.
2. Load a test disc (MDW-74/GA-1). (Refer to Note 1.)
3. Press the ◀◀ or ▶▶ button while REC IT is off, and move the optical pick-up outside the pit.
4. Move the multi-stick and display “EF MO CHECK”(C14).
5. Press the PUSH ENTER button and display “EFB = ⬚⬚ MO-R”. (Laser power READ power/Focus servo ON/tracking servo OFF/ spindle (S) servo ON)
6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied.
   (Read power traverse checking)

(Traverse Waveform)

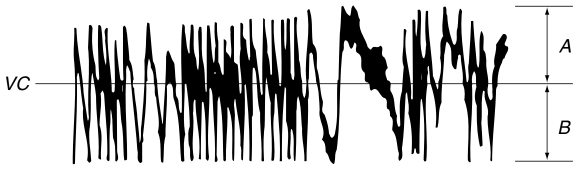


Specified value : Below 10% offset value

Offset value (%) = $\frac{|A-B|}{2(A+B)} \times 100$

7. Press the PUSH ENTER button and display “EFB = ⬚⬚ MO-W”.
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied.
   (Write power traverse checking)

(Traverse Waveform)

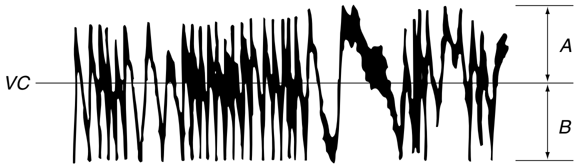


Specified value : Below 10% offset value

Offset value (%) = $\frac{|A-B|}{2(A+B)} \times 100$

9. Press the PUSH ENTER button display “EFB = ⬚⬚ MO-P”.
   Then, the optical pick-up moves to the pit area automatically and servo is imposed.
10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied.

(Traverse Waveform)



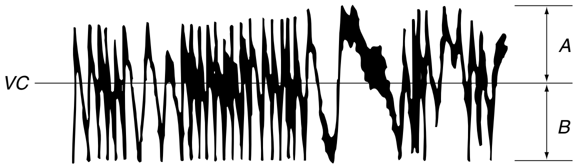
Specified value : Below 10% offset value

Offset value (%) = $\frac{|A-B|}{2(A+B)} \times 100$

11. Press the PUSH ENTER button display “EF MO CHECK” (C14).
    The disc stops rotating automatically.
12. Press the MD ⏏ button while REC IT is off and remove the disc.
13. Load the check disc (MD) TDYS-1.
14. Move the multi-stick and display “EF CD CHECK” (C15).
15. Press the PUSH ENTER button and display “EFB = ⬚⬚ CD”.
    Servo is imposed automatically.

16. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not move the Multi stick.

(Traverse Waveform)



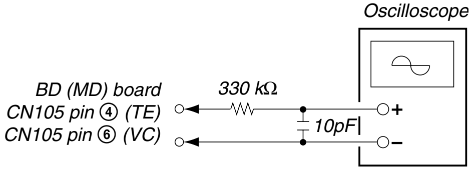
Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

17. Press the PUSH ENTER button and display “EF CD CHECK” (C15).
18. Press the MD ⏏ button while REC IT is off and remove the check disc (MD) TDYS-1.

Note 1 : MO reading data will be erased during if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



6-6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to “6-5. Using the Continuously Recorded Disc”.)
2. Move the multi-stick and display “CPLAY1MODE”(C34).
3. Press the PUSH ENTER button and display “CPLAY1MID”.
4. Press the CLEAR button while REC IT is lit when “C = □□□□ AD = □□” is displayed.
5. Move the multi-stick and display “FBIAS CHECK”(C16).
6. Press the PUSH ENTER button and display “ □□□□/□□ c = □□”. The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
   Check that the C1 error is below 20 and ADER is below 2.
7. Press the PUSH ENTER button and display “ □□□□/□□ b = □□”. Check that the C1 error is below 100 and ADER is below 2.
8. Press the PUSH ENTER button and display “ □□□□/□□ a = □□”. Check that the C1 error is below 100 and ADER is below 2.
9. Press the CLEAR button while REC IT is lit, next press the MD ⏏ button while REC IT is off, and remove the test disc.

6-6-8. C PLAY Check

MO Error Rate Check

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to “6-5. Using the Continuously Recorded Disc”.)
2. Move the multi-stick and display “CPLAY1MODE”(C34).
3. Press the PUSH ENTER button and display “CPLAY1MID”.
4. The display changes to “C1 = □□□□ AD = □□”.
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the CLEAR button while REC IT is lit, stop playback, press the MD ⏏ button while REC IT is off, and test disc.

CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Move the multi-stick and display “CPLAY1MODE”(C34).
3. Press the PUSH ENTER button twice and display “CPLAY1 MID”.
4. The display changes to “C1 = □□□□ AD = □□”.
5. Check that the C1 error rate is below 20.
6. Press the CLEAR button while REC IT is lit, stop playback, press the MD ⏏ button while REC IT is off, and the test disc.

6-6-9. Self-Recording/playback Check

Prepare a continuous recording disc using the unit to be repaired and check the error rate.

Checking Procedure :

1. Insert a recordable test disc (MDW-74/GA-1) into the unit.
2. Move the multi-stick to display “CREC 1MODE”(C35).
3. Press the PUSH ENTER button to display the “CREC 1MID”.
4. When recording starts, “ **MD REC** ” is displayed, this becomes “CREC (@@@@)” (@@@@ is the address), and recording starts.
5. About 1 minute later, press the CLEAR button to stop continuous recording while REC IT is lit.
6. Move the multi-stick to display “CPLAY1MODE”(C34).
7. Press the PUSH ENTER button to display “CPLAY1MID”.
8. “C1 = □□□□ AD = □□” will be displayed.
9. Check that the C1 error becomes below 20 and the AD error below 2.
10. Press the CLEAR button to stop playback while REC IT is lit, and press the MD ⏏ button while REC IT is off and remove the disc.

6-7. INITIAL SETTING OF ADJUSTMENT VALUE

Note:
Mode which sets the adjustment results recorded in the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment will not change to the initial setting value.
If initial setting is performed, perform all adjustments again excluding the temperature compensation offset adjustment.
For details of the initial setting, refer to "6-4. Precautions for Adjustments" and execute the initial setting before the adjustment as required.

Setting Procedure :

1. Move the multi-stick to display "ADJ CLEAR" (C28).
2. Press the PUSH ENTER button. "Complete!" will be displayed momentarily and initial setting will be executed, after which "ADJ CLEAR" (C28) will be displayed.

6-8. RECORDING AND DISPLAYING THE Iop INFORMATION

The Iop data can be recorded in the non-volatile memory. The Iop value on the label of the optical pick-up and the Iop value after the adjustment will be recorded. Recording these data eliminates the need to read the label on the optical pick-up.

Recording Procedure :

1. Move the multi-stick to display "Iop Write" (C05), and press the PUSH ENTER button.
2. The display becomes Ref=@@@.@ (@ is an arbitrary number) and the numbers which can be changed will blink.
3. Input the Iop value written on the optical pick-up.
   To select the number : Move the multi-stick.
   To select the digit : Press the MD REC MODE button while REC IT is lit.
4. When the PUSH ENTER button is pressed, the display becomes "Measu=@@@.@" (@ is an arbitrary number).
5. As the adjustment results are recorded for the 6 value. Leave it as it is and press the PUSH ENTER button.
6. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

Display Procedure :

1. Move the multi-stick to display "Iop Read"(C26).
2. Press the PUSH ENTER button.
2. "@@.@/##.#" is displayed and the recorded contents are displayed.
   @@.@ indicates the Iop value labeled on the pick-up.
   ##.# indicates the Iop value after adjustment
3. To end, press the CLEAR button while REC IT is lit, or press the MD REC MODE button while REC IT is lit and display "Iop Read" (C26).

6-9. TEMPERATURE COMPENSATION OFFSET ADJUTMENT

Save the temperature data at that time in the non-volatile memory as 25 ˚C reference data.

Note :

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 ˚C to 28 ˚C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 ˚C to 28 ˚C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

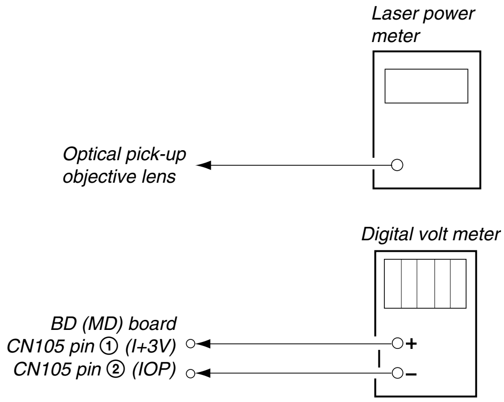
Adjusting Procedure :

1. Move the multi-stick and display "TEMP ADJUS" (C03).
2. Press the PUSH ENTER button and select the "TEMP ADJUS" (C03) mode.
3. "TEMP = ▯▯ [OK]" and the current temperature data will be displayed.
4. To save the data, press the PUSH ENTER button.
   When not saving the data, press the CLEAR button while REC IT is lit.
5. When the PUSH ENTER button is pressed, "TEMP = ▯▯ SAVE" will be displayed and turned back to "TEMP ADJUS" (C03) display then. Pressing the CLEAR button while REC IT is lit displays "TEMP ADJUS" (C03) immediately.

Specified Value :
The "TEMP = ▯▯" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

6-10. LASER POWER ADJUSTMENT

Check the Iop value of the optical pick-up before adjustments.
(Refer to 6-8. Recording and Displaying the Iop Information.)



Connection :
Adjusting Procedure :

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly,press the ◀◀ or ▶▶ button while REC IT is off and move the optical pick-up.)
   Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (IOP).
2. Move the multi-stick and display "LDPWR ADJUS" (C04).
   (Laser power : For adjustment)
3. Press the PUSH ENTER button once and display "LD 0.9 mW $ ▯▯".
4. Move the multi-stick so that the reading of the laser power meter becomes 0.85 to 0.91 mW. Press the PUSH ENTER button after setting the range knob of the laser power meter, and save the adjustment results. ("LD SAVE $ ▯▯" will be displayed for a moment.)
5. Then "LD 7.0 mW $ ▯▯" will be displayed.
6. Move the multi-stick so that the reading of the laser power meter becomes 6.9 to 7.1 mW, press the PUSH ENTER button and save it.

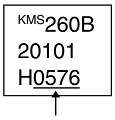
Note : Do not perform the emission with 7.0 mW more than 15 seconds continuously.

7. Then, move the multi-stick and display “LDPWR CHECK” (C13).
8. Press the PUSH ENTER button once and display “LD 0.9 mW $ ⬚⬚”. Check that the reading of the laser power meter become 0.85 to 0.91 mW.
9. Press the PUSH ENTER button once more and display “LD 7.0 mW $ ⬚⬚”. Check that the reading the laser power meter and digital volt meter satisfy the specified value.
   Note down the digital voltmeter reading value.

Specified Value :

Laser power meter reading : 7.0 ± 0.1 mW
Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)



(For details of the method for checking this value, refer to “6-8. Recording and Displaying the Iop Information”.)

Iop = 57.6 mA in this case
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

10. Press the CLEAR button while REC IT is lit and display “LDPWR CHECK” (C13) and stop the laser emission.
    (The CLEAR button is effective at all times to stop the laser emission.)
11. Move the multi-stick to display “Iop Write”(C05).
12. Press the PUSH ENTER button. When the display becomes Ref=@@@.@ (@ is an arbitrary number), press the PUSH ENTER button to display “Measu=@@@.@” (@ is an arbitrary number).
13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.
    To select the number : Move the multi-stick.
    To select the digit : Press the MD REC MODE button while REC IT is lit.
14. When the PUSH ENTER button is pressed, “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write” (C05).

Note 1: After step 4, each time the PUSH ENTER button is pressed, the display will be switched between “LD 0.7 mW $ ⬚⬚”, “LD 6.2 mW $ ⬚⬚”, and “LD Wp $ ⬚⬚”. Nothing needs to be performed here.

6-11. Iop NV SAVE

Write the reference values in the nonvolatile memory to perform “Iop compare”. As this involves rewriting the reference values, do not perform this procedure except when adjusting the laser power during replacement of the optical pick-up and when replacing the IC102. Otherwise the optical pick-up check may deteriorate.

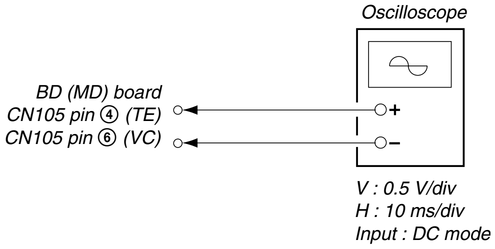
Note: Perform this function with the optical pick-up set at room temperature.

Procedure

1. Move the multi-stick to display “Iop NV Save” (C06).
2. Press the PUSH ENTER button and display “Iop [stop]”.
3. After the display changes to “Iop =xxsave?”, press the PUSH ENTER button.
4. After “Complete!” is displayed momentarily, the display changes to “Iop 7.0 mW”.
5. After the display changes to “Iop=yysave?”, press the PUSH ENTER button.
6. When “Complete!” is displayed, it means that Iop NV saving has been completed.

6-12. TRAVERSE ADJUSTMENT

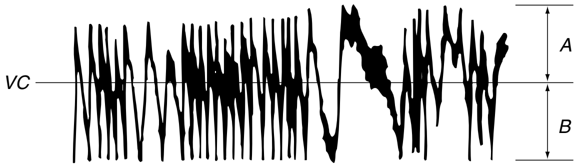
Connection :



Adjusting Procedure :

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD board.
2. Load a test disc (MDW-74/GA-1). (Refer to Note 1.)
3. Press the ◀◀ or ▶▶ button while REC IT is off and move the optical pick-up outside the pit.
4. Move the multi-stick and display “EF MO ADJUS” (C14).
5. Press the PUSH ENTER button and display “EFB = ⬚⬚ MO-R”.
   (Laser power READ power/Focus servo ON/tracking servo OFF/ spindle (S) servo ON)
6. Move the multi-stick so that the waveform of the oscilloscope becomes the specified value.
   (When the Multi sitck is moved, the ⬚⬚ of “EFB= ⬚⬚” changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Read power traverse adjustment)

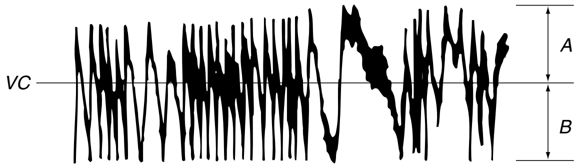
(Traverse Waveform)



Specification A = B

7. Press the PUSH ENTER button and save the result of adjustment to the non-volatile memory (“EFB = ⬚⬚ SAVE” will be displayed for a moment. Then “EFB = ⬚⬚ MO-W” will be displayed).
8. Move the multi-stick so that the waveform of the oscilloscope becomes the specified value.
   (When the Multi stick is moved, the ⬚⬚ of “EFB- ⬚⬚ MO-W” changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Write power traverse adjustment)

(Traverse Waveform)

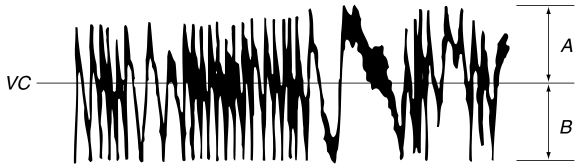


Specification A = B

9. Press the PUSH ENTER button, and save the adjustment results in the non-volatile memory. (“EFB = ⬚⬚ SAVE” will be displayed for a moment.)
10. “EFB = ⬚⬚ MO-P”. will be displayed.
    The optical pick-up moves to the pit area automatically and servo is imposed.

11. Move the multi-stick until the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

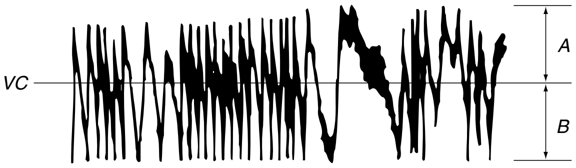
(Traverse Waveform)



Specification A = B

12. Press the PUSH ENTER button, and save the adjustment results in the non-volatile memory. (“EFB = ⬚⬚ SAVE” will be displayed for a moment.)
    Next “EF MO ADJUS” (C07) is displayed. The disc stops rotating automatically.
13. Press the MD ⏏ button while REC IT is off and remove the disc.
14. Load the check disc (MD) TDYS-1.
15. Move the multi-stick and display “EF CD ADJUS” (C08).
16. Press the PUSH ENTER button and display “EFB = ⬚⬚ CD”. Servo is imposed automatically.
17. Move the multi-stick so that the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)

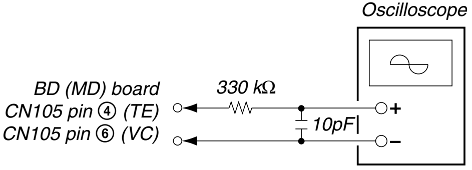


Specification A = B

18. Press the PUSH ENTER button, display “EFB = ⬚⬚ SAVE” for a moment and save the adjustment results in the non-volatile memory.
    Next “EF CD ADJUS” (C08) will be displayed.
19. Press the MD ⏏ button while REC IT is off and remove the check disc (MD) TDYS-1.

Note 1 : MO reading data will be erased during if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



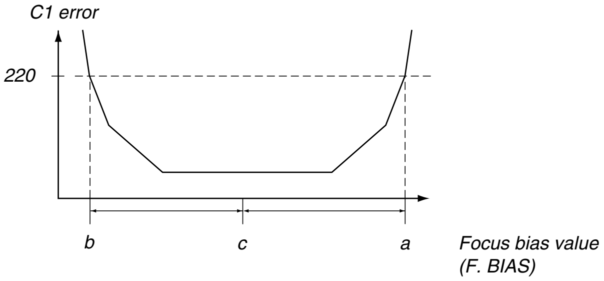
6-13. FOCUS BIAS ADJUSTMENT

Adjusting Procedure :

1. Load a test disk (MDW-74/GA-1).
2. Move the multi-stick and display “CPLAY1MODE”(C34).
3. Press the PUSH ENTER button and display “CPLAY1MID”.
4. Press the CLEAR button while REC IT is lit when “C1 = ⬚⬚⬚⬚ AD = ⬚⬚” is displayed.
5. Move the multi-stick and display “FBIAS ADJUS”(C09).
6. Press the PUSH ENTER button and display “ ⬚⬚⬚⬚/⬚⬚ a = ⬚⬚”.
   The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [a =] indicate the focus bias value.
7. Move the multi-stick in the right direction and find the focus bias value at which the C1 error rate becomes 220 (Refer to Note 2).
8. Press the PUSH ENTER button and display “ ⬚⬚⬚⬚/⬚⬚ b = ⬚⬚”.
9. Move the multi-stick in the left direction and find the focus bias value at which the C1 error rate becomes 220.
10. Press the PUSH ENTER button and display “ ⬚⬚⬚⬚/⬚⬚ c = ⬚⬚”.
11. Check that the C1 error rate is below 20 and ADER is 00. Then press the PUSH ENTER button.
12. If the “(⬚⬚” in “⬚⬚ - ⬚⬚ - ⬚⬚ (⬚⬚” is above 20, press the PUSH ENTER button.
    If below 20, press the CLEAR button while REC IT is lit and repeat the adjustment from step 2.
13. Press the MD ⏏ button while REC IT is off and remove the test disc.

Note 1 : The relation between the C1 error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position C is automatically calculated from points a and b.

Note 2 : As the C1 error rate changes, perform the adjustment using the average vale.



6-14. ERROR RATE CHECK

6-14-1. CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Move the multi-stick and display “CPLAY1MODE” (C34).
3. Press the PUSH ENTER button twice and display “CPLAY1 MID”.
4. The display changes to “C1 = ⬚⬚⬚⬚ AD = ⬚⬚”.
5. Check that the C1 error rate is below 20.
6. Press the CLEAR button while REC IT is lit, stop playback, press the MD ⏏ button while REC IT is off, and remove the test disc.

6-14-2. MO Error Rate Check

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1).
   (Refer to “6-5. Using the Continuously Recorded Disc”.)
2. Move the multi-stick and display “CPLAY1MODE” (C34).
3. Press the PUSH ENTER button and display “CPLAY1MID”.

4. The display changes to “C1 = ⬚⬚⬚⬚ AD = ⬚⬚”.
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the CLEAR buttonwhile REC IT is lit, stop playback, press the MD ⏏ button while REC IT is off, and remove the test disc.

6-15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA-1). (Refer to “6-5. Using the Continuously Recorded Disc”.)
2. Move the multi-stick and display “CPLAY1 MODE”(C34).
3. Press the PUSH ENTER button twice and display “CPLAY1 MID”.
4. Press the CLEAR button while REC IT is lit when “C1 = ⬚⬚⬚⬚ AD = ⬚⬚” is displayed.
5. Move the multi-stick and display “FBIAS CHECK”(C16).
6. Press the PUSH ENTER button and display “ ⬚⬚⬚⬚/⬚⬚ c = ⬚⬚”. The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
   Check that the C1 error is below 20 and ADER is below 2.
7. Press the PUSH ENTER button and display “ ⬚⬚⬚⬚/⬚⬚ b = ⬚⬚”. Check that the C1 error is below 100 and ADER is below 2.
8. Press the PUSH ENTER button and display “ ⬚⬚⬚⬚/⬚⬚ a = ⬚⬚”. Check that the C1 error is below 100 and ADER is below 2
9. Press the CLEAR button while REC IT is lit, next press the MD ⏏ button while REC IT is off and remove the continuously recorded disc.

Note 1 : If the C1 error and ADER are above other than the specified value at points a (step 8. in the above) or b (step 7. in the above), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

6-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

Be sure to perform this adjustment when the optical pick-up is replaced.

If the adjustment results becomes “Adjust NG!”, the optical pick-up may be faulty or the servo system circuits may be abnormal.

6-16-1. CD Auto Gain Control Output Level Adjustment

Adjusting Procedure :

1. Insert the check disc (MD) TDYS-1.
2. Move the multi-stick to display “AG Set (CD)” (C11).
3. When the PUSH ENTER button is pressed, the adjustment will be performed automatically.
   “Complete!” will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to “AG Set (CD)” (C11).
4. Press the MD ⏏ button while REC IT is off and remove the disc.

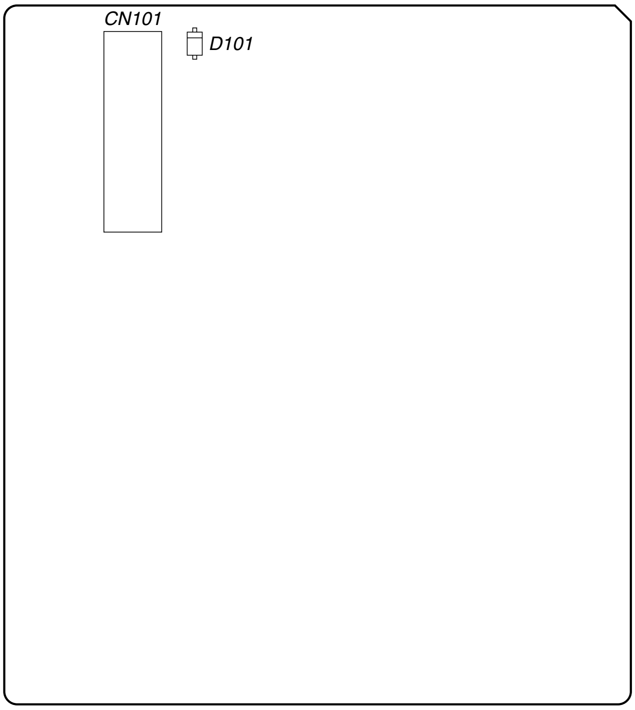
6-16-2. MO Auto Gain Control Output Level Adjustment

Adjusting Procedure :

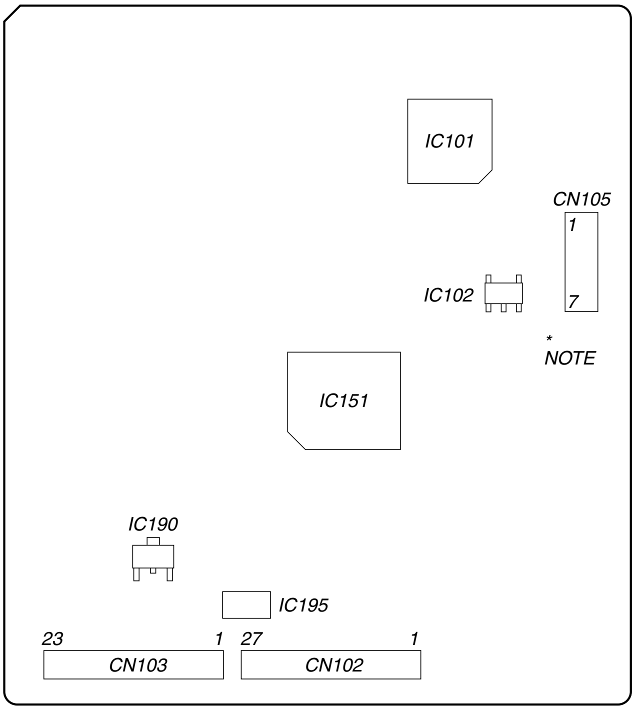
1. Insert the reference disc (MDW-74/GA-1) for recording.
2. Move the multi-stick to display “AG Set (MO)” (C10).
3. When the PUSH ENTER button is pressed, the adjustment will be performed automatically.
   “Complete!” will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to “AG Set (MO)” (C10).
4. Press the MD ⏏ button while REC IT is off and remove the disc.

6-17. ADJUSTING POINTS AND CONNECTING POINTS

[BD (MD) BOARD] (SIDE A)



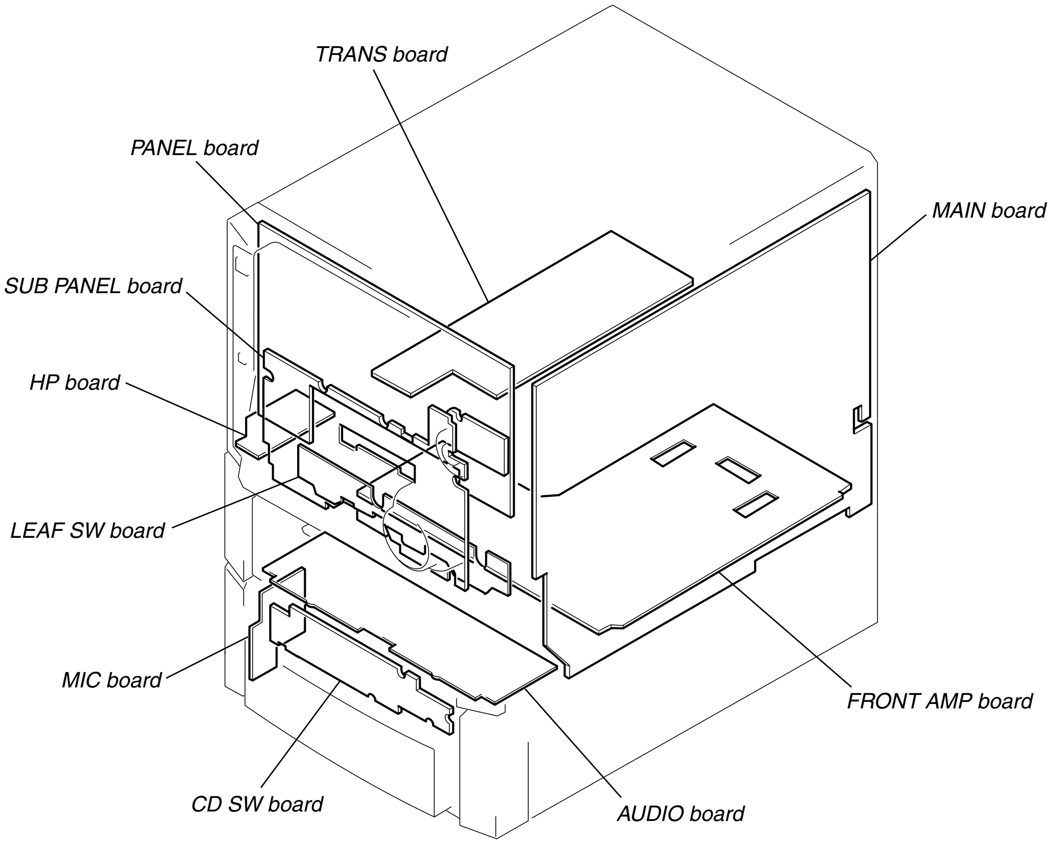
[BD (MD) BOARD] (SIDE B)

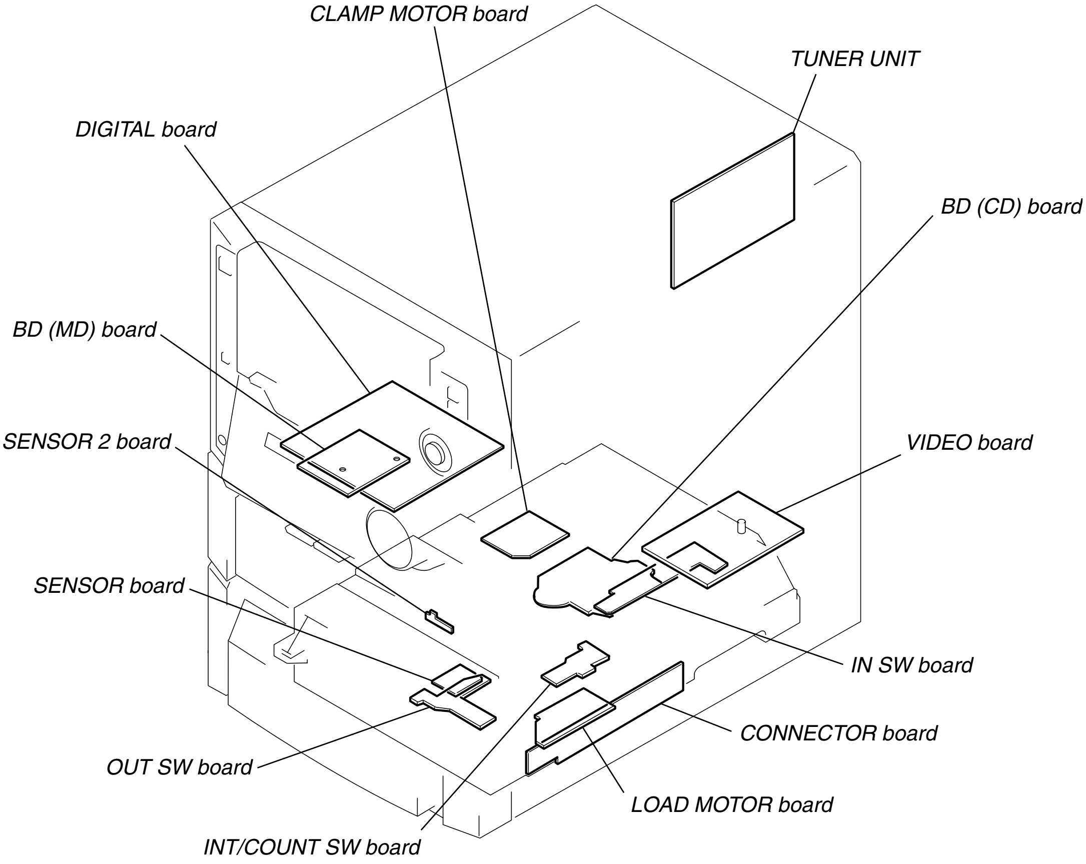


NOTE: It is useful to use the jig. for checking the waveform. (Refer to Servicing Note on page 9.)

SECTION 7
DIAGRAMS

7-1. CIRCUIT BOARDS LOCATION


TRANS board
PANEL board
MAIN board
SUB PANEL board
HP board
LEAF SW board
MIC board
FRONT AMP board
CD SW board
AUDIO board


CLAMP MOTOR board
TUNER UNIT
DIGITAL board
BD (CD) board
BD (MD) board
SENSOR 2 board
VIDEO board
SENSOR board
IN SW board
CONNECTOR board
OUT SW board
LOAD MOTOR board
INT/COUNT SW board

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

For schematic diagrams.

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $^1/_4$ W or less unless otherwise specified.
- △ : internal component.
- ─▭─ : nonflammable resistor.
- ─∿─ : fusible resistor.
- ▭ : panel designation.
- **B +** : B+ Line.
- **B –** : B– Line.

> **Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
> Replace only with part number specified.

- ▬ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - ⇨ : FM
  - ⇨⋙ : VIDEO/MD (AUDIO)
  - ⊐ : PB (DECK A)
  - ▷ : PB (DECK B)
  - ▷» : REC (DECK B)
  - ⇨ : CD (Analog)
  - ⇨» : CD/MD (Digital)
  - ⊐⋙ : MD (PB)
  - ▶⋙ : MD (REC)
  - ▷ : MIC

- Abbreviation

HK	: Hong Kong model
MY	: Malaysia model
SP	: Singapore model
JE	: Tourist model

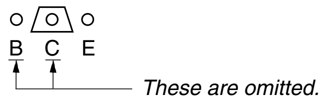
For printed wiring boards.

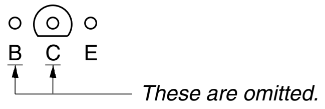
Note:

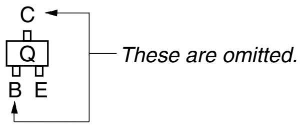
- o─── : parts extracted from the component side.
- ─── : parts extracted from the conductor side.
- ○ : Through hole.
- ▒ : Pattern from the side which enables seeing.

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

- **Indication of transistor**



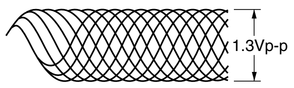




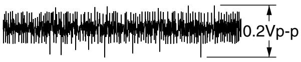
• WAVEFORMS

– BD (MD) SECTION –

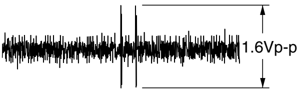
① IC101 ㊱ (BOTM)



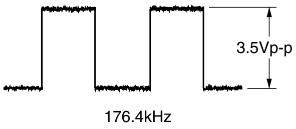
② IC101 ㉞ (FE)
(Play mode)



③ IC101 ㉖ (TE)
(Play mode)

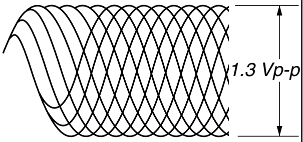


④ IC151 (90) (FS4)

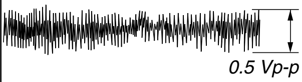


– BD (CD) SECTION –

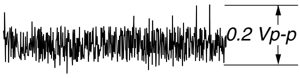
① IC101 ㊿
(RFAC)(CD Play mode)



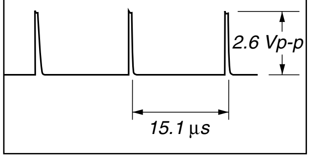
② IC101 ㊶
(TE)(CD Play mode)



③ IC101 ㊴
(FE)(CD Play mode)

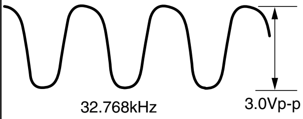


④ IC101 ㉕ (MDP)

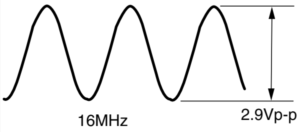


– MAIN SECTION –

① IC401 ⑪ (XC-OUT)

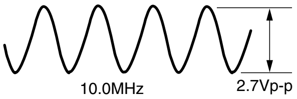


② IC401 ⑬ (X-OUT)



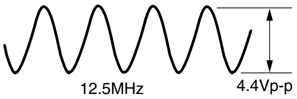
– MD DIGITAL SECTION –

① IC1001 ⑳ (X OUT)



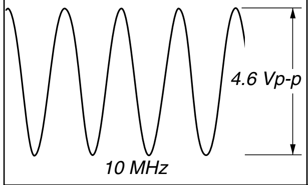
– PANEL SECTION –

① IC701 (91) (X OUT)

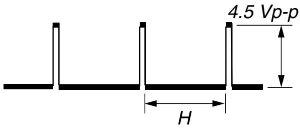


–VIDEO SECTION –

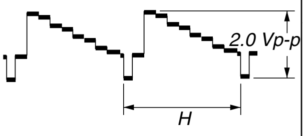
① IC502 ⑬ (XOUT)



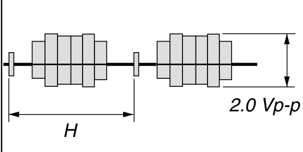
② IC502 ㉖ (BGP)



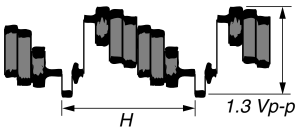
③ J301 ④ (YOUT)



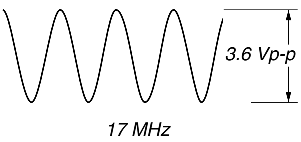
④ J301 ③ (COUT)



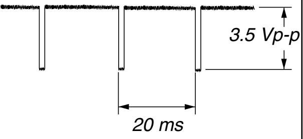
⑤ J302 (VIDEO OUT)



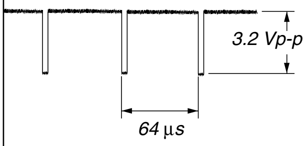
⑥ IC505 (86) (DA-XCLK)



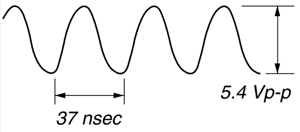
⑦ IC505 (93) (VSYNC)



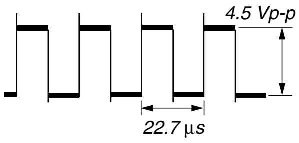
⑧ IC505 (101) (HSYNC)



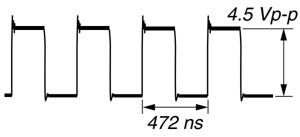
⑨ IC505 (106) (VCK-IN)



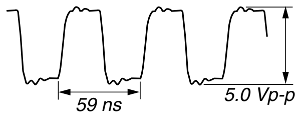
⑩ IC505 (108) (DA-LRCK)



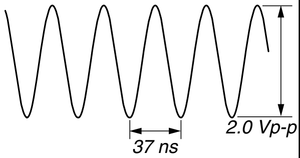
⑪ IC505 (111) (DA-BCK)



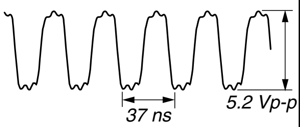
⑫ IC509 ⑳ (384FSO)



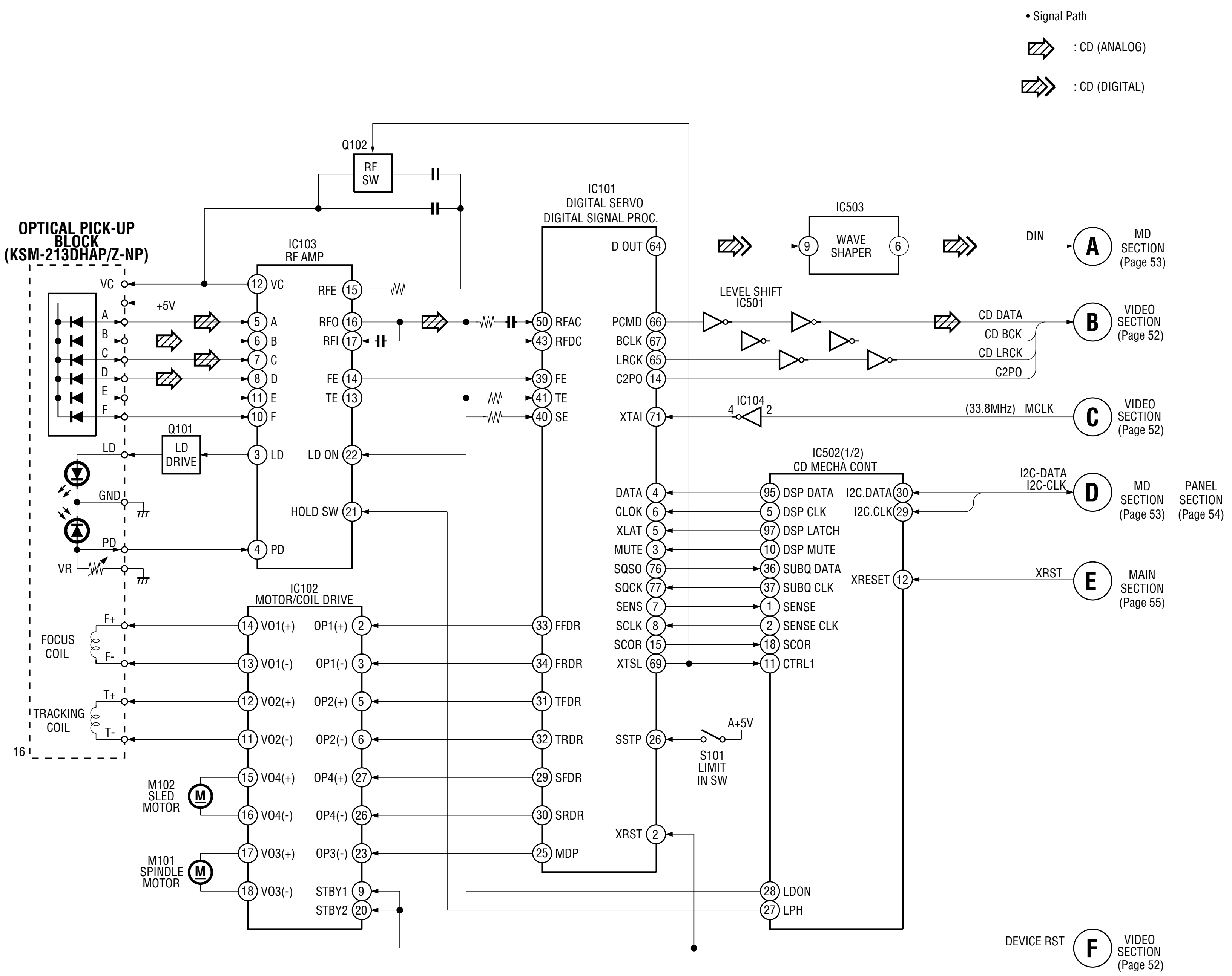
⑬ IC509 ㉔ (XT2)



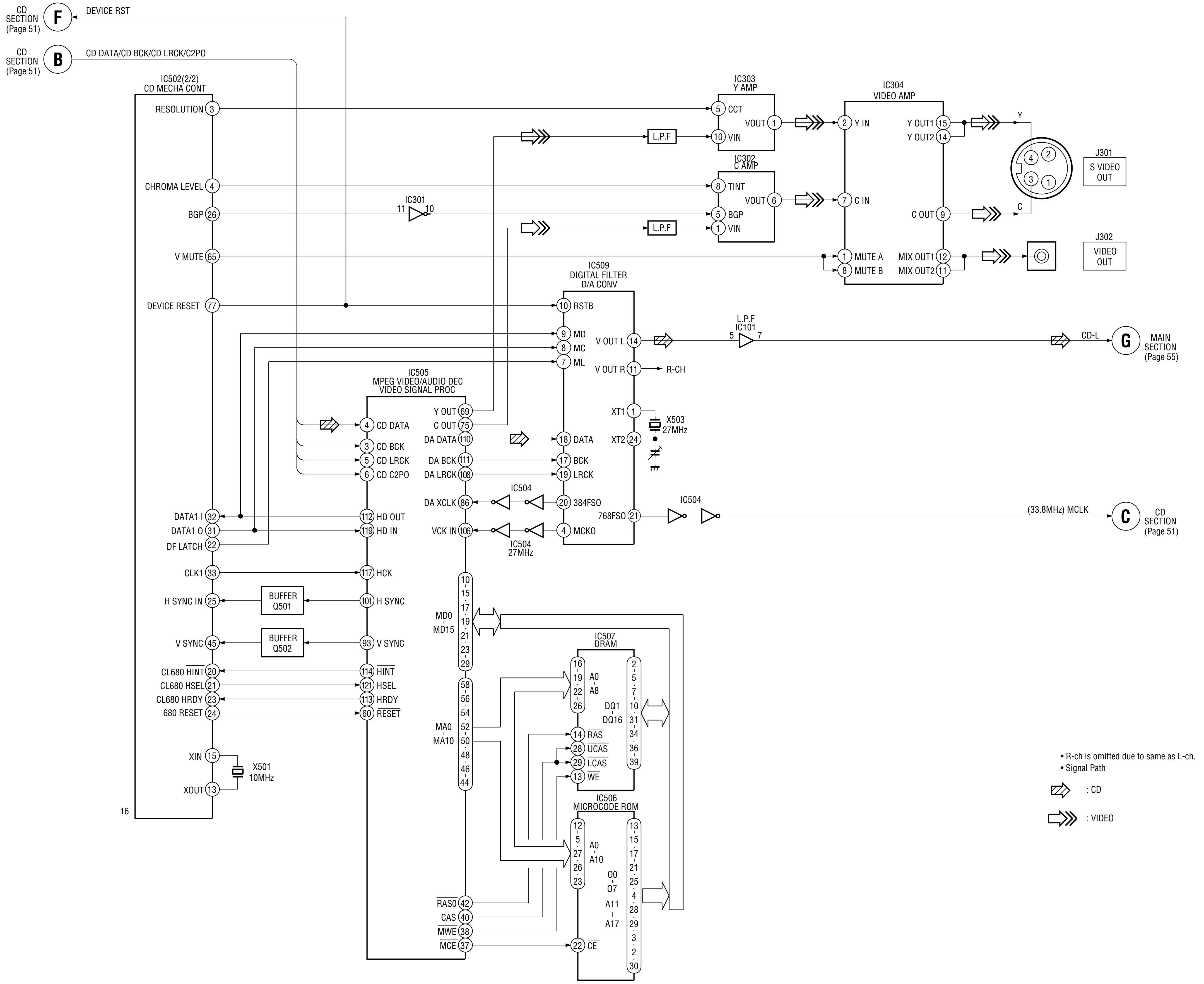
⑭ IC509 ④ (MCKO)



7-2. BLOCK DIAGRAMS
– CD SECTION –


• Signal Path
: CD (ANALOG)
: CD (DIGITAL)
OPTICAL PICK-UP BLOCK (KSM-213DHAP/Z-NP)
VC
+5V
A
B
C
D
E
F
LD
GND
PD
VR
FOCUS COIL
F+
F-
TRACKING COIL
T+
T-
16
Q101
LD DRIVE
Q102
RF SW
IC103
RF AMP
12 VC
5 A
6 B
7 C
8 D
11 E
10 F
3 LD
4 PD
RFE 15
RFO 16
RFI 17
FE 14
TE 13
LD ON 22
HOLD SW 21
IC102
MOTOR/COIL DRIVE
14 VO1(+)
13 VO1(-)
12 VO2(+)
11 VO2(-)
15 VO4(+)
16 VO4(-)
17 VO3(+)
18 VO3(-)
OP1(+) 2
OP1(-) 3
OP2(+) 5
OP2(-) 6
OP4(+) 27
OP4(-) 26
OP3(-) 23
STBY1 9
STBY2 20
M102
SLED MOTOR
M
M101
SPINDLE MOTOR
M
IC101
DIGITAL SERVO
DIGITAL SIGNAL PROC.
50 RFAC
43 RFDC
39 FE
41 TE
40 SE
33 FFDR
34 FRDR
31 TFDR
32 TRDR
29 SFDR
30 SRDR
25 MDP
D OUT 64
PCMD 66
BCLK 67
LRCK 65
C2PO 14
XTAI 71
DATA 4
CLOK 6
XLAT 5
MUTE 3
SQSO 76
SQCK 77
SENS 7
SCLK 8
SCOR 15
XTSL 69
SSTP 26
XRST 2
A+5V
S101
LIMIT
IN SW
IC503
9 WAVE SHAPER 6
DIN
LEVEL SHIFT
IC501
CD DATA
CD BCK
CD LRCK
C2PO
IC104
4
2
(33.8MHz) MCLK
IC502(1/2)
CD MECHA CONT
95 DSP DATA
5 DSP CLK
97 DSP LATCH
10 DSP MUTE
36 SUBQ DATA
37 SUBQ CLK
1 SENSE
2 SENSE CLK
18 SCOR
11 CTRL1
28 LDON
27 LPH
I2C.DATA 30
I2C.CLK 29
XRESET 12
I2C-DATA
I2C-CLK
XRST
DEVICE RST
A
MD SECTION (Page 53)
B
VIDEO SECTION (Page 52)
C
VIDEO SECTION (Page 52)
D
MD SECTION (Page 53)
PANEL SECTION (Page 54)
E
MAIN SECTION (Page 55)
F
VIDEO SECTION (Page 52)

– VIDEO SECTION –

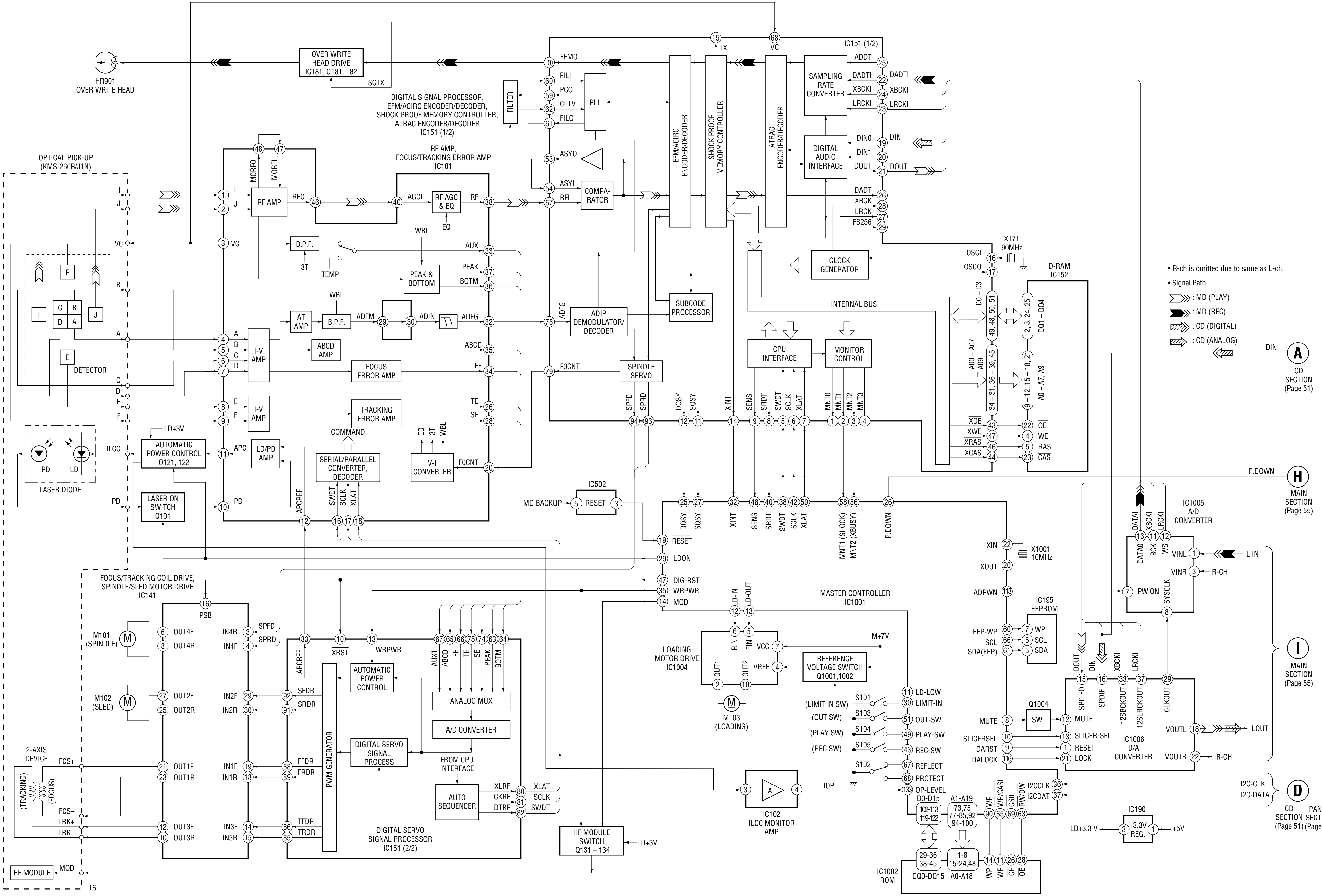

CD SECTION (Page 51)
F
DEVICE RST
CD SECTION (Page 51)
B
CD DATA/CD BCK/CD LRCK/C2PO
IC502(2/2) CD MECHA CONT
RESOLUTION 3
CHROMA LEVEL 4
BGP 26
V MUTE 65
DEVICE RESET 77
DATA1 I 32
DATA1 O 31
DF LATCH 22
CLK1 33
H SYNC IN 25
V SYNC 45
CL680 HINT 20
CL680 HSEL 21
CL680 HRDY 23
680 RESET 24
XIN 15
XOUT 13
16
X501 10MHz
BUFFER Q501
BUFFER Q502
IC301
11
10
L.P.F
L.P.F
IC303 Y AMP
5 CCT
10 VIN
VOUT 1
IC302 C AMP
8 TINT
5 BGP
1 VIN
VOUT 6
IC304 VIDEO AMP
2 Y IN
7 C IN
1 MUTE A
8 MUTE B
Y OUT1 15
Y OUT2 14
C OUT 9
MIX OUT1 12
MIX OUT2 11
Y
C
4
2
3
1
J301 S VIDEO OUT
J302 VIDEO OUT
IC509 DIGITAL FILTER D/A CONV
10 RSTB
9 MD
8 MC
7 ML
V OUT L 14
V OUT R 11
R-CH
XT1 1
XT2 24
X503 27MHz
18 DATA
17 BCK
19 LRCK
20 384FSO
4 MCKO
768FSO 21
L.P.F IC101
5
7
CD-L
G
MAIN SECTION (Page 55)
IC504
(33.8MHz) MCLK
C
CD SECTION (Page 51)
IC505 MPEG VIDEO/AUDIO DEC VIDEO SIGNAL PROC
4 CD DATA
3 CD BCK
5 CD LRCK
6 CD C2PO
112 HD OUT
119 HD IN
117 HCK
101 H SYNC
93 V SYNC
114 HINT
121 HSEL
113 HRDY
60 RESET
Y OUT 69
C OUT 75
DA DATA 110
DA BCK 111
DA LRCK 108
DA XCLK 86
VCK IN 106
IC504
IC504 27MHz
MD0 – MD15
10 15 17 19 21 23 29
MA0 – MA10
58 56 54 52 50 48 46 44
RAS0 42
CAS 40
MWE 38
MCE 37
IC507 DRAM
16 19 22 26
A0 – A8
14 RAS
28 UCAS
29 LCAS
13 WE
DQ1 – DQ16
2 5 7 10 31 34 36 39
IC506 MICROCODE ROM
12 5 27 26 23
A0 – A10
22 CE
O0 – O7
A11 – A17
13 15 17 21 25 4 28 29 3 2 30

- R-ch is omitted due to same as L-ch.
- Signal Path

▨ : CD

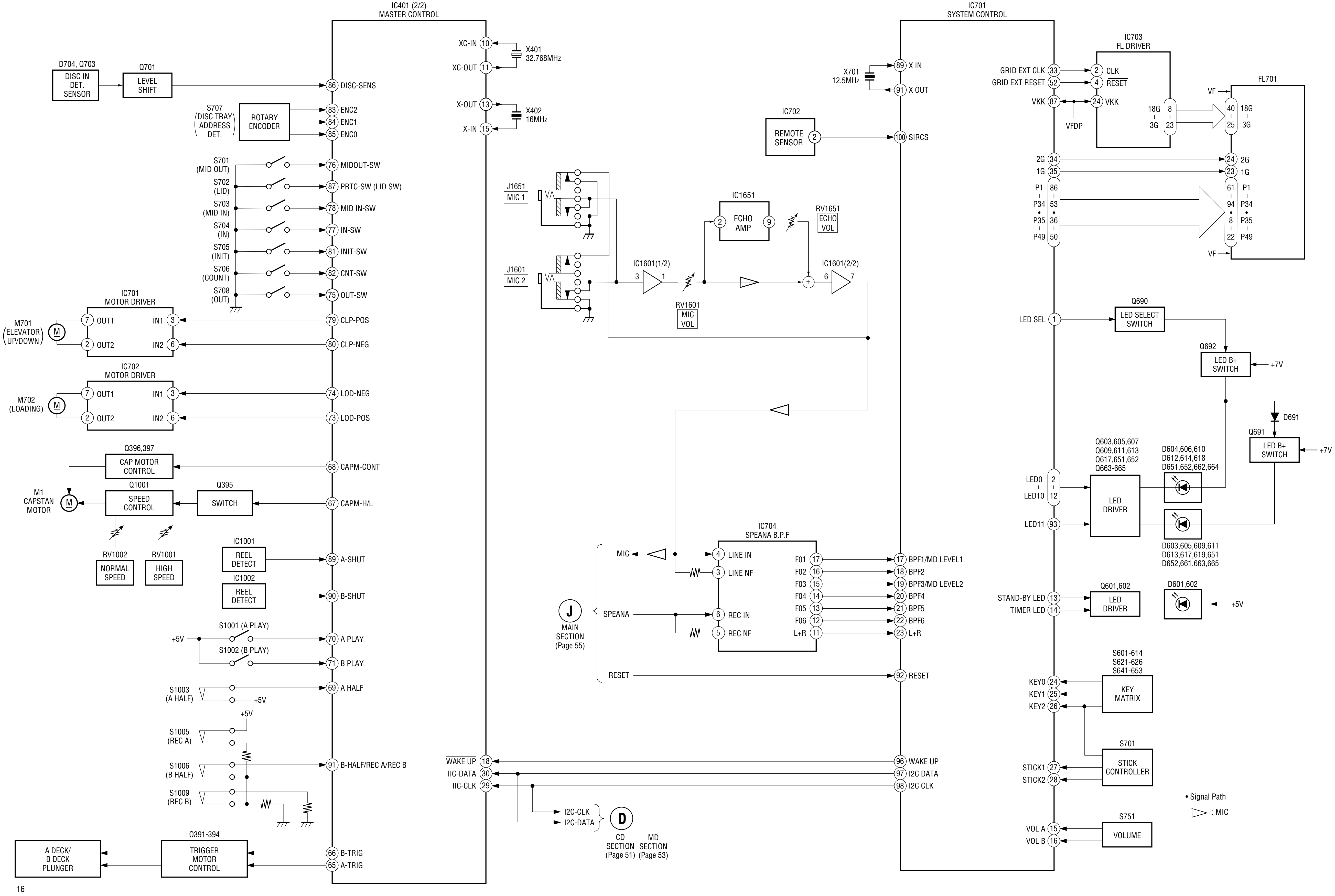
⇨ : VIDEO

– MD SECTION –

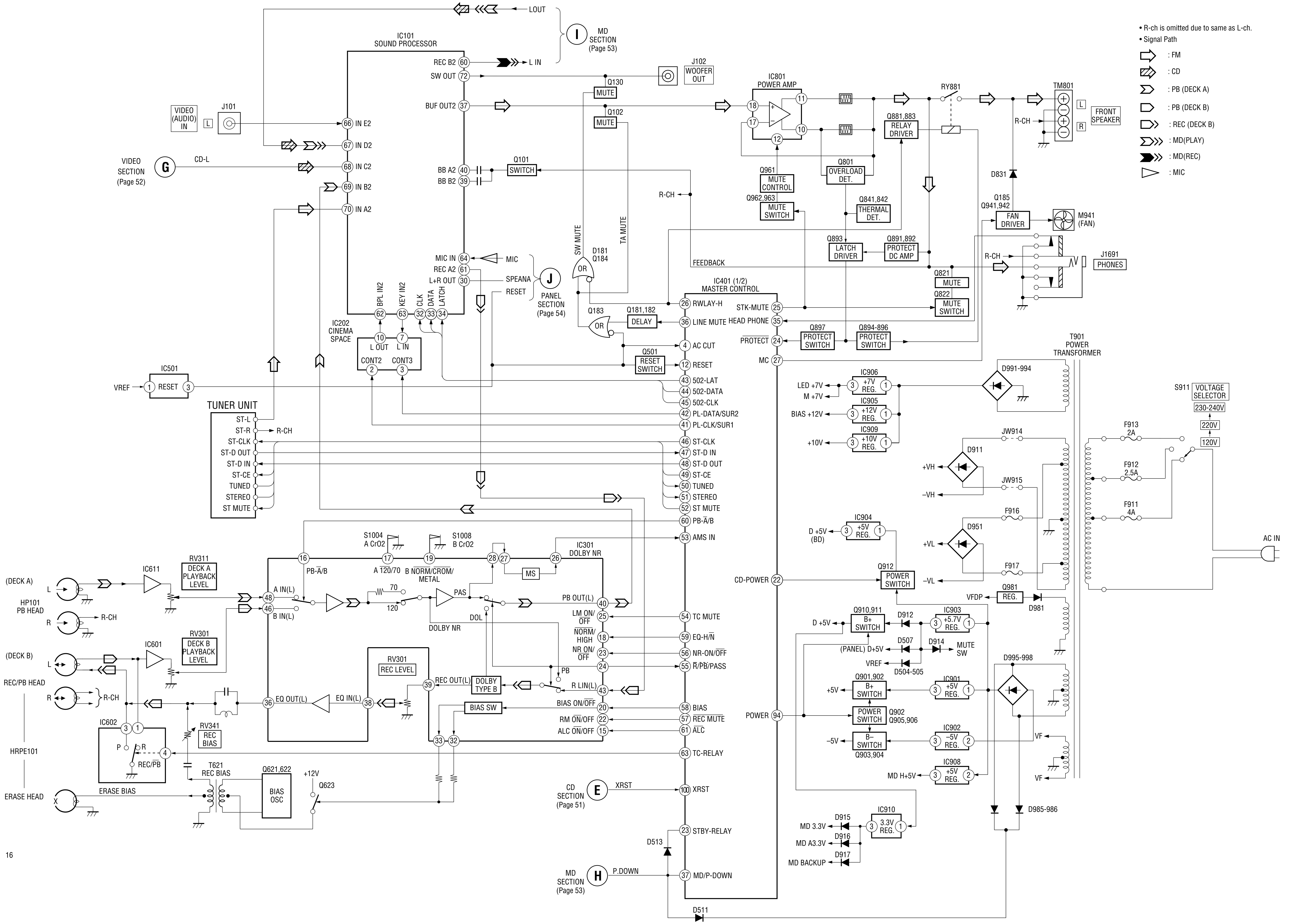

HR901
OVER WRITE HEAD
OVER WRITE
HEAD DRIVE
IC181, Q181, 182
SCTX
DIGITAL SIGNAL PROCESSOR,
EFM/ACIRC ENCODER/DECODER,
SHOCK PROOF MEMORY CONTROLLER,
ATRAC ENCODER/DECODER
IC151 (1/2)
RF AMP,
FOCUS/TRACKING ERROR AMP
IC101
OPTICAL PICK-UP
(KMS-260B/J1N)
DETECTOR
LASER DIODE
PD
LD
ILCC
LD+3V
AUTOMATIC
POWER CONTROL
Q121, 122
LASER ON
SWITCH
Q101
RF AMP
RFO
MORFO
MORFI
B.P.F.
3T
TEMP
PEAK &
BOTTOM
WBL
AGCI
RF AGC
& EQ
EQ
RF
AUX
PEAK
BOTM
AT
AMP
B.P.F.
ADFM
ADIN
ADFG
ABCD
AMP
I-V
AMP
FOCUS
ERROR AMP
FE
TRACKING
ERROR AMP
TE
SE
LD/PD
AMP
APC
COMMAND
SERIAL/PARALLEL
CONVERTER,
DECODER
V-I
CONVERTER
FOCNT
APCREF
SWDT
SCLK
XLAT
EFMO
FILI
PCO
CLTV
FILO
FILTER
PLL
ASYO
ASYI
RFI
COMPA-
RATOR
ADIP
DEMODULATOR/
DECODER
EFM/ACIRC
ENCODER/DECODER
SHOCK PROOF
MEMORY CONTROLLER
ATRAC
ENCODER/DECODER
SUBCODE
PROCESSOR
SPINDLE
SERVO
SPFD
SPRD
DQSY
SQSY
XINT
SENS
SRDT
SWDT
SCLK
XLAT
MNT0
MNT1
MNT2
MNT3
TX
VC
SAMPLING
RATE
CONVERTER
DIGITAL
AUDIO
INTERFACE
ADDT
DADTI
XBCKI
LRCKI
DIN0
DIN1
DOUT
DADT
XBCK
LRCK
FS256
CLOCK
GENERATOR
OSCI
OSCO
X171
90MHz
INTERNAL BUS
CPU
INTERFACE
MONITOR
CONTROL
D-RAM
IC152
D0 – D3
A00 – A07
A09
DQ1 – DQ4
A0 – A7, A9
XOE
XWE
XRAS
XCAS
OE
WE
RAS
CAS
IC502
RESET
MD BACKUP
MASTER CONTROLLER
IC1001
MNT1 (SHOCK)
MNT2 (XBUSY)
P.DOWN
RESET
LDON
DIG-RST
WRPWR
MOD
LD-IN
LD-OUT
XIN
XOUT
X1001
10MHz
ADPWN
IC195
EEPROM
EEP-WP
SCL
SDA(EEP)
WP
SDA
LOADING
MOTOR DRIVE
IC1004
RIN
FIN
VCC
VREF
OUT1
OUT2
M103
(LOADING)
M+7V
REFERENCE
VOLTAGE SWITCH
Q1001,1002
S101
S103
S104
S105
S102
(LIMIT IN SW)
(OUT SW)
(PLAY SW)
(REC SW)
LD-LOW
LIMIT-IN
OUT-SW
PLAY-SW
REC-SW
REFLECT
PROTECT
OP-LEVEL
IOP
IC102
ILCC MONITOR
AMP
D0-D15
A1-A19
WR/CASL
CS0
RW/DW
IC1002
ROM
DQ0-DQ15
A0-A18
I2CCLK
I2CDAT
MUTE
SLICERSEL
DARST
DALOCK
Q1004
SW
IC1005
A/D
CONVERTER
DATAI
XBCKI
LRCKI
DATA0
BCK
WS
VINL
VINR
PW ON
SYSCLK
L IN
R-CH
IC1006
D/A
CONVERTER
DOUT
DIN
SPDIFO
SPDIFI
12SBCKOUT
12SLRCKOUT
CLKOUT
SLICER-SEL
LOCK
VOUTL
VOUTR
LOUT
IC190
+3.3V
REG.
LD+3.3 V
+5V
I2C-CLK
I2C-DATA
A
CD
SECTION
(Page 51)
H
MAIN
SECTION
(Page 55)
I
MAIN
SECTION
(Page 55)
D
CD
SECTION
(Page 51)
PANEL
SECTION
(Page 54)
FOCUS/TRACKING COIL DRIVE,
SPINDLE/SLED MOTOR DRIVE
IC141
PSB
M101
(SPINDLE)
M102
(SLED)
OUT4F
OUT4R
OUT2F
OUT2R
OUT1F
OUT1R
OUT3F
OUT3R
IN4R
IN4F
IN2F
IN2R
IN1F
IN1R
IN3F
IN3R
2-AXIS
DEVICE
(TRACKING)
(FOCUS)
FCS+
FCS–
TRK+
TRK–
HF MODULE
16
XRST
AUTOMATIC
POWER
CONTROL
PWM GENERATOR
SFDR
SRDR
FFDR
FRDR
TFDR
TRDR
DIGITAL SERVO
SIGNAL
PROCESS
ANALOG MUX
A/D CONVERTER
FROM CPU
INTERFACE
AUTO
SEQUENCER
XLRF
CKRF
DTRF
DIGITAL SERVO
SIGNAL PROCESSOR
IC151 (2/2)
HF MODULE
SWITCH
Q131 – 134
LD+3V

- R-ch is omitted due to same as L-ch.
- Signal Path
  - ▷▷ : MD (PLAY)
  - ▶▶ : MD (REC)
  - ▨ : CD (DIGITAL)
  - ▨ : CD (ANALOG)

– SYSCON/SERVO SECTION–

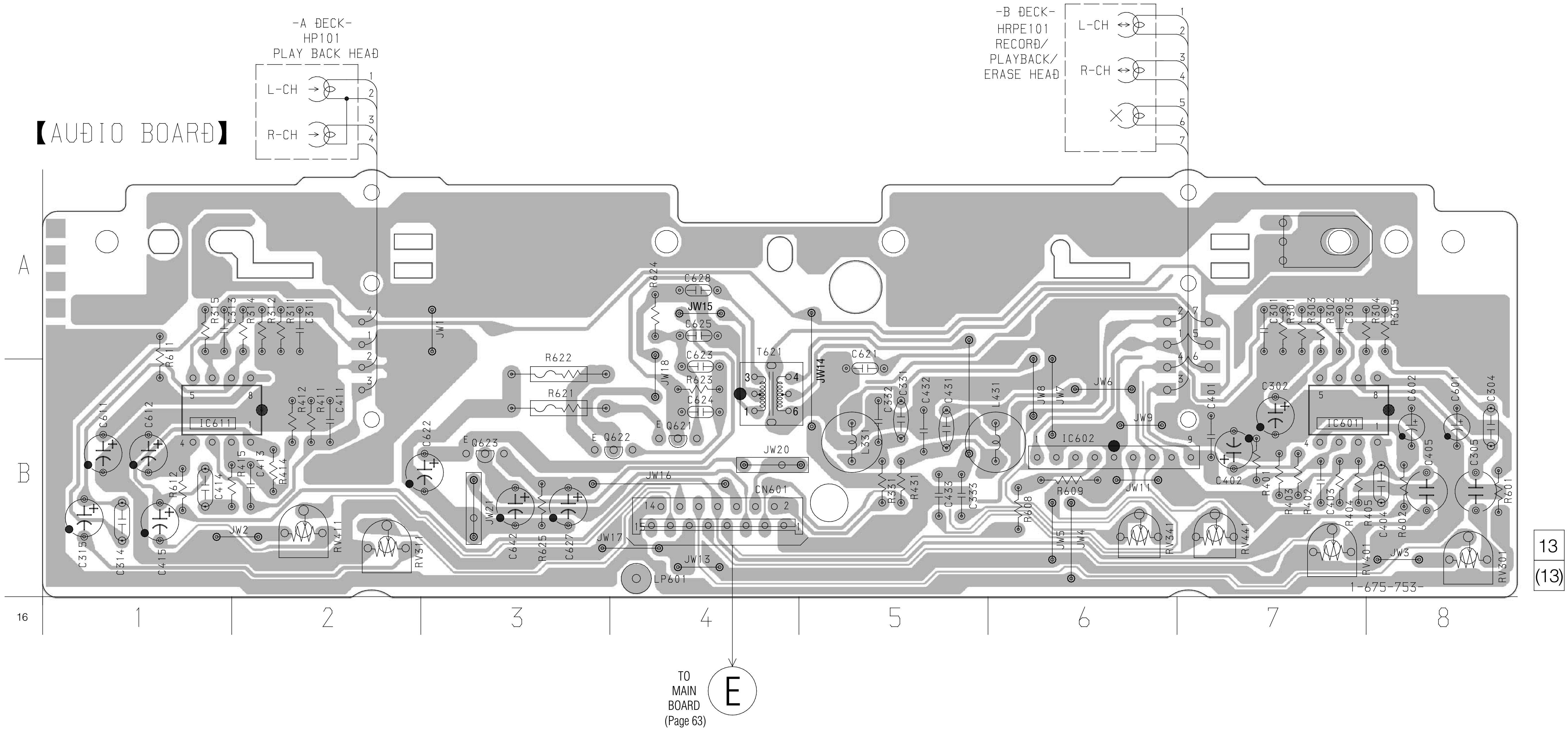

IC401 (2/2)
MASTER CONTROL
XC-IN 10
XC-OUT 11
X401
32.768MHz
X-OUT 13
X-IN 15
X402
16MHz
D704, Q703
DISC IN DET. SENSOR
Q701
LEVEL SHIFT
86 DISC-SENS
S707 (DISC TRAY ADDRESS DET.)
ROTARY ENCODER
83 ENC2
84 ENC1
85 ENC0
S701 (MID OUT)
76 MIDOUT-SW
S702 (LID)
87 PRTC-SW (LID SW)
S703 (MID IN)
78 MID IN-SW
S704 (IN)
77 IN-SW
S705 (INIT)
81 INIT-SW
S706 (COUNT)
82 CNT-SW
S708 (OUT)
75 OUT-SW
IC701
MOTOR DRIVER
7 OUT1
IN1 3
2 OUT2
IN2 6
M701 (ELEVATOR UP/DOWN)
M
79 CLP-POS
80 CLP-NEG
IC702
MOTOR DRIVER
7 OUT1
IN1 3
2 OUT2
IN2 6
M702 (LOADING)
M
74 LOD-NEG
73 LOD-POS
Q396,397
CAP MOTOR CONTROL
68 CAPM-CONT
M1 CAPSTAN MOTOR
M
Q1001
SPEED CONTROL
Q395
SWITCH
67 CAPM-H/L
RV1002
NORMAL SPEED
RV1001
HIGH SPEED
IC1001
REEL DETECT
89 A-SHUT
IC1002
REEL DETECT
90 B-SHUT
S1001 (A PLAY)
+5V
70 A PLAY
S1002 (B PLAY)
71 B PLAY
S1003 (A HALF)
+5V
69 A HALF
+5V
S1005 (REC A)
S1006 (B HALF)
91 B-HALF/REC A/REC B
S1009 (REC B)
Q391-394
A DECK/ B DECK PLUNGER
TRIGGER MOTOR CONTROL
66 B-TRIG
65 A-TRIG
WAKE UP 18
IIC-DATA 30
IIC-CLK 29
16
J1651
MIC 1
J1601
MIC 2
IC1651
2 ECHO AMP 9
RV1651
ECHO VOL
IC1601(1/2)
3 1
RV1601
MIC VOL
IC1601(2/2)
6 7
IC704
SPEANA B.P.F
MIC
4 LINE IN
3 LINE NF
SPEANA
6 REC IN
5 REC NF
F01 17
F02 16
F03 15
F04 14
F05 13
F06 12
L+R 11
J
MAIN SECTION (Page 55)
RESET
I2C-CLK
I2C-DATA
D
CD SECTION (Page 51)
MD SECTION (Page 53)
IC701
SYSTEM CONTROL
X701
12.5MHz
89 X IN
91 X OUT
IC702
REMOTE SENSOR 2
100 SIRCS
17 BPF1/MD LEVEL1
18 BPF2
19 BPF3/MD LEVEL2
20 BPF4
21 BPF5
22 BPF6
23 L+R
92 RESET
96 WAKE UP
97 I2C DATA
98 I2C CLK
IC703
FL DRIVER
GRID EXT CLK 33
2 CLK
GRID EXT RESET 52
4 RESET
VKK 87
24 VKK
VFDP
18G – 3G
8 – 23
FL701
VF
40 – 25
18G – 3G
2G 34
24 2G
1G 35
23 1G
P1 – P34 • P35 – P49
86 – 53 • 36 – 50
61 – 94 • 8 – 22
P1 – P34 • P35 – P49
VF
LED SEL 1
Q690
LED SELECT SWITCH
Q692
LED B+ SWITCH
+7V
D691
Q691
LED B+ SWITCH
+7V
Q603,605,607
Q609,611,613
Q617,651,652
Q663-665
D604,606,610
D612,614,618
D651,652,662,664
LED0 – LED10
2 – 12
LED DRIVER
LED11 93
D603,605,609,611
D613,617,619,651
D652,661,663,665
Q601,602
D601,602
STAND-BY LED 13
TIMER LED 14
LED DRIVER
+5V
S601-614
S621-626
S641-653
KEY0 24
KEY1 25
KEY2 26
KEY MATRIX
S701
STICK1 27
STICK2 28
STICK CONTROLLER
S751
VOL A 15
VOL B 16
VOLUME
• Signal Path
▷ : MIC

– MAIN SECTION –

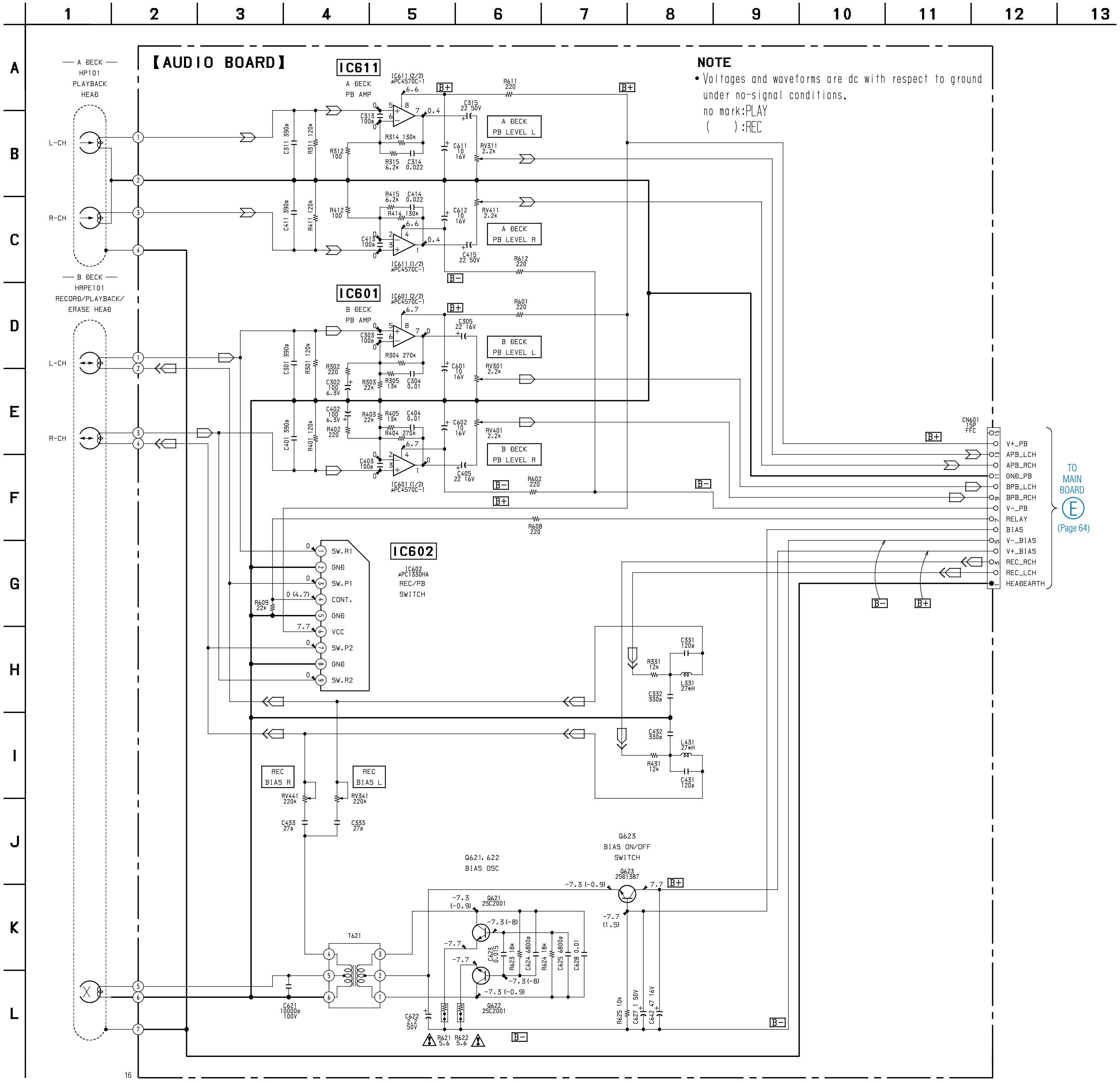

LOUT
MD SECTION (Page 53)
IC101 SOUND PROCESSOR
REC B2 60
L IN
SW OUT 72
J102 WOOFER OUT
Q130 MUTE
BUF OUT2 37
Q102 MUTE
IC801 POWER AMP
RY881
TM801
L
R
R-CH
FRONT SPEAKER
VIDEO (AUDIO) IN
J101
66 IN E2
67 IN D2
68 IN C2
69 IN B2
70 IN A2
VIDEO SECTION (Page 52)
CD-L
BB A2 40
BB B2 39
Q101 SWITCH
Q881,883 RELAY DRIVER
Q801 OVERLOAD DET.
Q961 MUTE CONTROL
Q962,963 MUTE SWITCH
Q841,842 THERMAL DET.
D831
Q185 Q941,942 FAN DRIVER
M941 (FAN)
R-CH
SW MUTE
TA MUTE
D181 Q184
OR
Q893 LATCH DRIVER
Q891,892 PROTECT DC AMP
FEEDBACK
J1691 PHONES
MIC IN 64
REC A2 61
L+R OUT 30
MIC
SPEANA
RESET
PANEL SECTION (Page 54)
Q821 MUTE
Q822 MUTE SWITCH
IC401 (1/2) MASTER CONTROL
26 RWLAY-H
STK-MUTE 25
Q183
Q181,182 DELAY
36 LINE MUTE
HEAD PHONE 35
PROTECT 24
Q897 PROTECT SWITCH
Q894-896 PROTECT SWITCH
4 AC CUT
Q501 RESET SWITCH
12 RESET
MC 27
BPL IN2 62
KEY IN2 63
CLK 32
DATA 33
LATCH 34
IC202 CINEMA SPACE
L OUT 10
L IN 7
CONT2 2
CONT3 3
T901 POWER TRANSFORMER
IC501 RESET
VREF 1 3
43 502-LAT
44 502-DATA
45 502-CLK
42 PL-DATA/SUR2
41 PL-CLK/SUR1
D991-994
IC906 +7V REG.
LED +7V
M +7V
IC905 +12V REG.
BIAS +12V
IC909 +10V REG.
+10V
S911 VOLTAGE SELECTOR
230-240V
220V
120V
TUNER UNIT
ST-L
ST-R
R-CH
ST-CLK
ST-D OUT
ST-D IN
ST-CE
TUNED
STEREO
ST MUTE
46 ST-CLK
47 ST-D IN
48 ST-D OUT
49 ST-CE
50 TUNED
51 STEREO
52 ST MUTE
60 PB-A/B
53 AMS IN
JW914
D911
+VH
JW915
–VH
F913 2A
F912 2.5A
F911 4A
F916
D951
+VL
F917
–VL
IC904 +5V REG.
D +5V (BD)
AC IN
S1004 A CrO2
S1008 B CrO2
IC301 DOLBY NR
16 PB-A/B
17 A 120/70
19 B NORM/CROM/METAL
28 27
26
MS
RV311 DECK A PLAYBACK LEVEL
IC611
(DECK A)
L
HP101 PB HEAD
R
R-CH
48 A IN(L)
46 B IN(L)
70
120
PAS
DOLBY NR
DOL
PB OUT(L) 40
LM ON/OFF 25
NORM/HIGH 18
NR ON/OFF 23
24
PB
R LIN(L) 43
BIAS ON/OFF 20
RM ON/OFF 22
ALC ON/OFF 15
CD-POWER 22
Q912 POWER SWITCH
Q981 REG.
VFDP
D981
54 TC MUTE
59 EQ-H/N
56 NR-ON/OFF
55 R/PB/PASS
58 BIAS
57 REC MUTE
61 ALC
63 TC-RELAY
(DECK B)
RV301 DECK B PLAYBACK LEVEL
IC601
REC/PB HEAD
R-CH
36 EQ OUT(L)
EQ IN(L) 38
RV301 REC LEVEL
REC OUT(L) 39
DOLBY TYPE B
BIAS SW
33 32
IC602
P R
REC/PB
4
RV341 REC BIAS
HRPE101
T621 REC BIAS
Q621,622 BIAS OSC
+12V
Q623
ERASE HEAD
ERASE BIAS
X
Q910,911 B+ SWITCH
D +5V
D912
IC903 +5.7V REG.
(PANEL) D+5V
D507
D914
MUTE SW
VREF
D504-505
D995-998
Q901,902 B+ SWITCH
+5V
IC901 +5V REG.
POWER 94
POWER SWITCH
Q902 Q905,906
IC902 –5V REG.
–5V
B– SWITCH
Q903,904
VF
IC908 +5V REG.
MD H+5V
VF
CD SECTION (Page 51)
XRST
100 XRST
D985-986
IC910 3.3V REG.
D915
MD 3.3V
D916
MD A3.3V
D917
MD BACKUP
23 STBY-RELAY
D513
MD SECTION (Page 53)
P.DOWN
37 MD/P-DOWN
D511
E
G
H
I
J

• R-ch is omitted due to same as L-ch.
• Signal Path
: FM
: CD
: PB (DECK A)
: PB (DECK B)
: REC (DECK B)
: MD(PLAY)
: MD(REC)
: MIC

7-3. PRINTED WIRING BOARD – DECK SECTION – • See page 48 for Circuit Boards Location.


-A DECK-
HP101
PLAY BACK HEAD
L-CH
R-CH
-B DECK-
HRPE101
RECORD/
PLAYBACK/
ERASE HEAD
L-CH
R-CH
【AUDIO BOARD】
A
B
IC611
IC601
IC602
T621
CN601
Q621
Q622
Q623
LP601
RV411
RV311
RV341
RV441
RV401
RV301
L331
L431
1-675-753-
13
(13)
16
1
2
3
4
5
6
7
8
TO
MAIN
BOARD
(Page 63)
E

7-4. SCHEMATIC DIAGRAM – DECK SECTION –


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
K
L
【AUDIO BOARD】
A DECK
HP101
PLAYBACK
HEAD
L-CH
R-CH
B DECK
HRPE101
RECORD/PLAYBACK/
ERASE HEAD
IC611
A DECK
PB AMP
IC611 (2/2)
µPC4570C-1
IC611 (1/2)
µPC4570C-1
C311 390p
R311 120k
C313 100p
R312 100
R314 130k
R315 6.2k
C314 0.022
C315 22 50V
C611 10 16V
RV311 2.2k
A DECK
PB LEVEL L
R611 220
C411 390p
R411 120k
R412 100
R415 6.2k
C414 0.022
R414 130k
C413 100p
C612 10 16V
RV411 2.2k
A DECK
PB LEVEL R
C415 22 50V
R612 220
6.6
0.4
IC601
B DECK
PB AMP
IC601 (2/2)
µPC4570C-1
IC601 (1/2)
µPC4570C-1
6.7
C301 390p
R301 120k
C303 100p
R304 270k
R302 220
C302 100 6.3V
R303 22k
R305 13k
C304 0.01
C601 10 16V
RV301 2.2k
C305 22 16V
B DECK
PB LEVEL L
R601 220
C401 390p
R401 120k
C402 100 6.3V
R402 220
R403 22k
R405 13k
C404 0.01
R404 270k
C403 100p
C602 10 16V
RV401 2.2k
C405 22 16V
B DECK
PB LEVEL R
R602 220
R608 220
B+
B−
IC602
IC602
µPC1330HA
REC/PB
SWITCH
SW.R1
GND
SW.P1
CONT.
GND
VCC
SW.P2
GND
SW.R2
0 (4.7)
7.7
R609 22k
C331 120p
R331 12k
L331 27µH
C332 330p
C432 330p
L431 27µH
R431 12k
C431 120p
REC
BIAS R
REC
BIAS L
RV441 220k
RV341 220k
C433 27p
C333 27p
T621
C621 10000p 100V
Q621, 622
BIAS OSC
Q621
2SC2001
Q622
2SC2001
-7.3 (-0.9)
-7.3 (-8)
-7.7
C623 0.015
R623 18k
C624 6800p
R624 18k
C625 6800p
C628 0.01
C622 2.2 50V
R621 5.6
R622 5.6
Q623
BIAS ON/OFF
SWITCH
Q623
2SB1387
-7.3 (-0.9)
7.7
-7.7 (1.5)
R625 10k
C627 1 50V
C642 47 16V
CN601
15P
FFC
V+_PB
APB_LCH
APB_RCH
GND_PB
BPB_LCH
BPB_RCH
V-_PB
RELAY
BIAS
V-_BIAS
V+_BIAS
REC_RCH
REC_LCH
HEADEARTH
TO
MAIN
BOARD
E
(Page 64)
16

NOTE

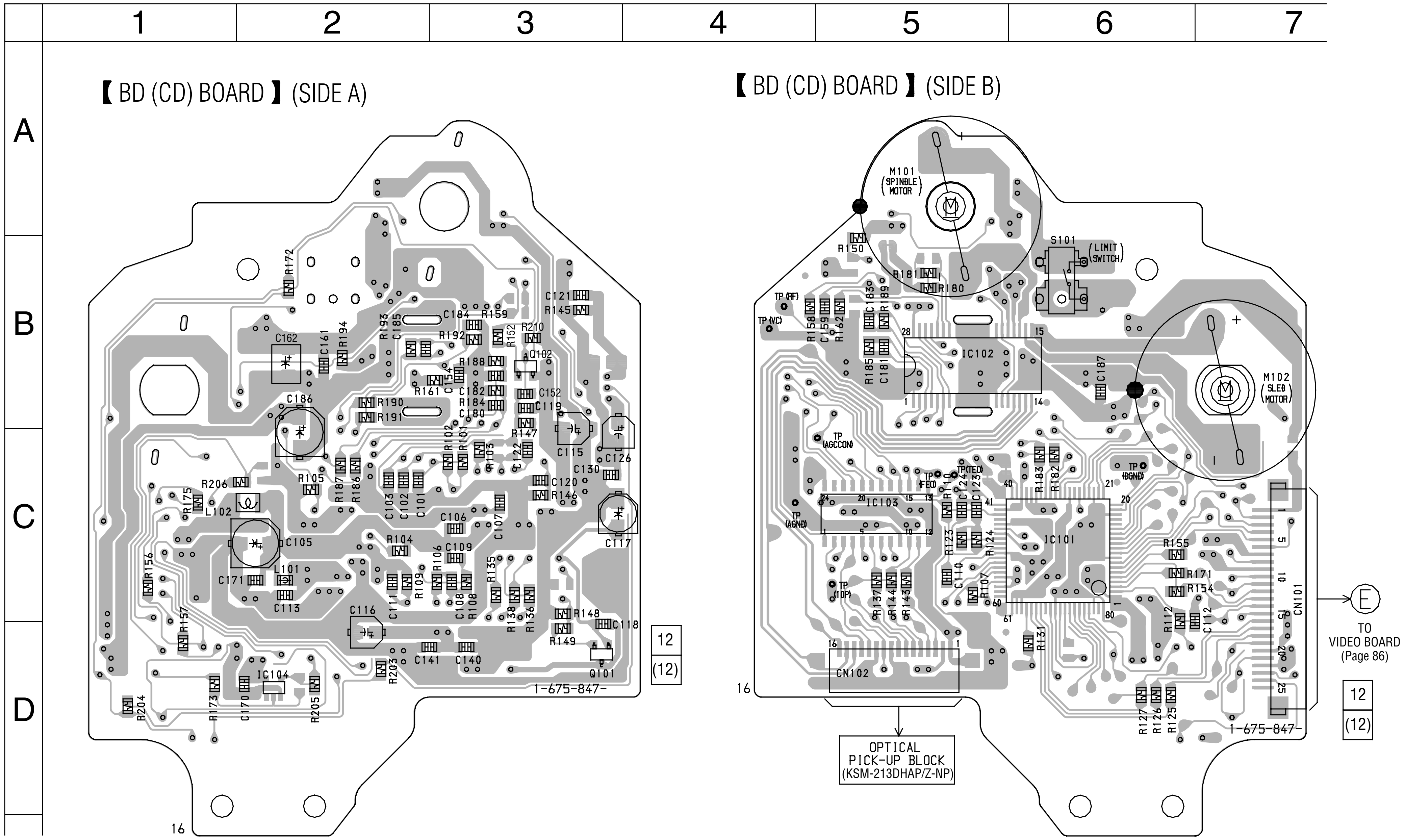
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: PLAY
  ( ) : REC

7-5. PRINTED WIRING BOARD – CD SECTION –

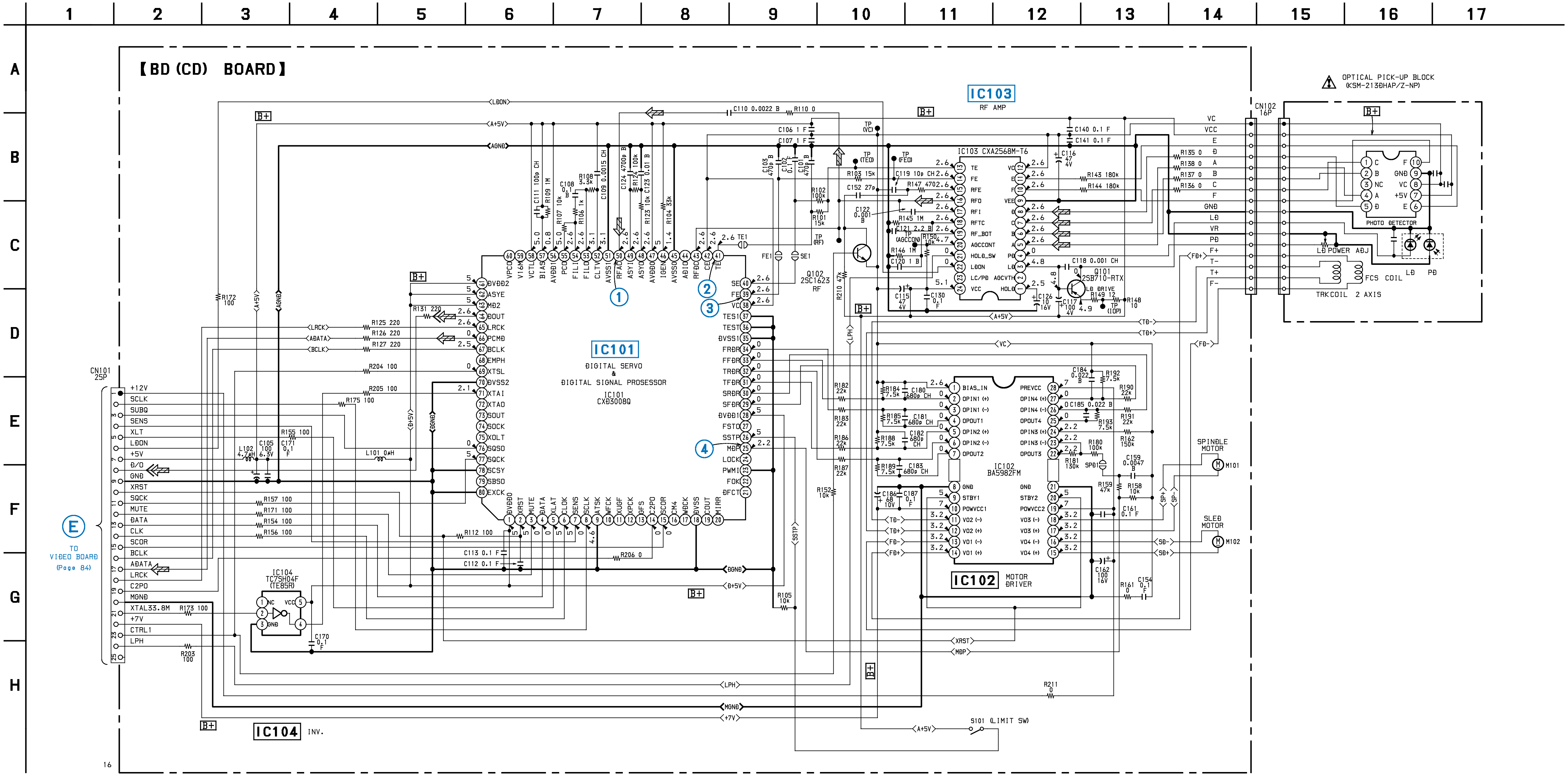
• See page 48 for Circuit Boards Location.

• Semiconductor Location

Ref. No.	Location
IC101	C-6
IC102	B-5
IC103	C-5
IC104	D-2
Q101	D-3


1
2
3
4
5
6
7
A
B
C
D
【 BD (CD) BOARD 】 (SIDE A)
【 BD (CD) BOARD 】 (SIDE B)
IC102
IC103
IC101
IC104
Q101
M101 (SPINDLE MOTOR)
M102 (SLED MOTOR)
S101 (LIMIT SWITCH)
CN101
CN102
TP (RF)
TP (VC)
TP (AGCCON)
TP (FEO)
TP (TEO)
TP (BGND)
TP (AGND)
TP (IOP)
1-675-847-
12
(12)
E
TO VIDEO BOARD (Page 86)
OPTICAL PICK-UP BLOCK (KSM-213DHAP/Z-NP)

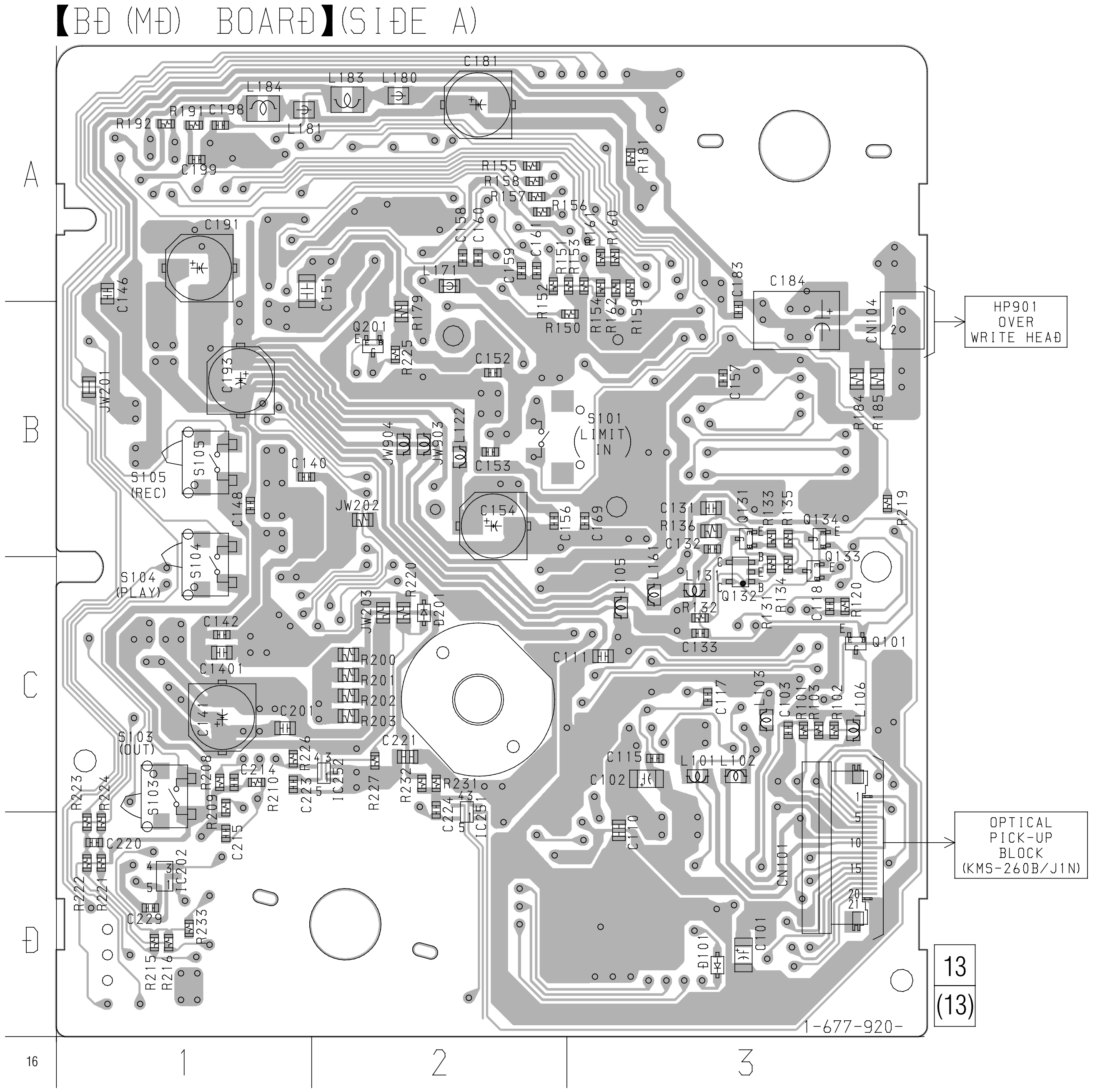
7-6. SCHEMATIC DIAGRAM – CD SECTION – • See page 50 for Waveforms. • See page 90 for IC Block Diagrams.

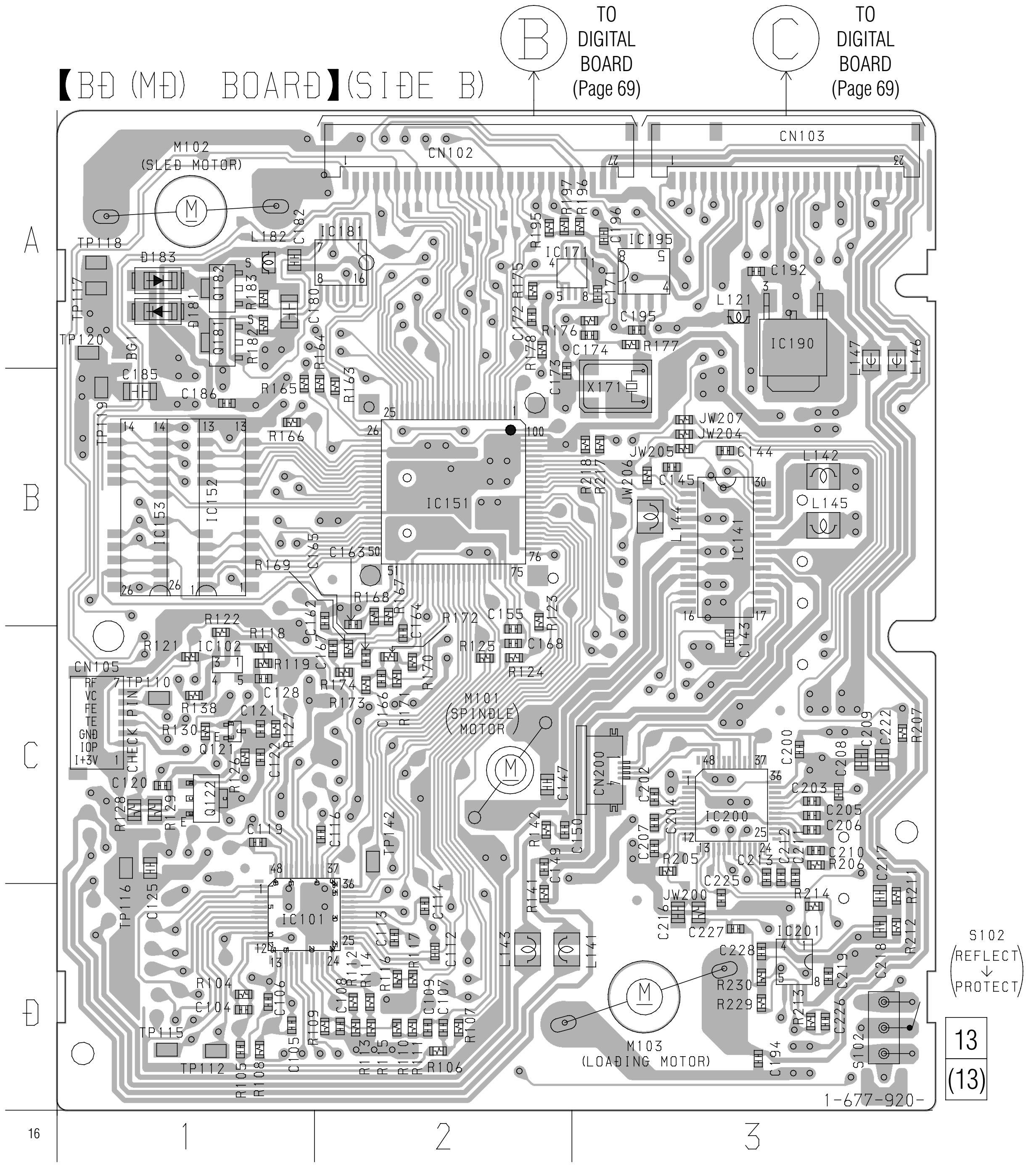


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H
【BD (CD) BOARD】
IC101
DIGITAL SERVO & DIGITAL SIGNAL PROCESSOR
IC101 CXD3008Q
IC102
MOTOR DRIVER
IC102 BA5982FM
IC103
RF AMP
IC103 CXA2568M-T6
IC104
INV.
IC104 TC7SH04F (TE85R)
OPTICAL PICK-UP BLOCK (KSM-213BHAP/Z-NP)
PHOTO DETECTOR
LD POWER ADJ
FCS COIL
TRK COIL
2 AXIS
LD
PD
CN101 25P
CN102 16P
E
TO VIDEO BOARD (Page 84)
+12V
SCLK
SUBQ
SENS
XLT
LDON
+5V
D/O
GND
XRST
SQCK
MUTE
DATA
CLK
SCOR
BCLK
ADATA
LRCK
C2PO
MGND
XTAL33.8M
+7V
CTRL1
LPH
VC
VCC
E
D
A
B
C
F
GND
LD
VR
PD
F+
T-
T+
F-
SPINDLE MOTOR
M101
SLED MOTOR
M102
S101 (LIMIT SW)
Q101 2SB710-RTX LD DRIVE
Q102 2SC1623 RF
1
2
3
4
B+

7-7. PRINTED WIRING BOARD – MD SECTION –

• See page 48 for Circuit Boards Location.


【BD (MD) BOARD】(SIDE A)
HP901 OVER WRITE HEAD
OPTICAL PICK-UP BLOCK (KMS-260B/J1N)
S101 (LIMIT IN)
S105 (REC)
S104 (PLAY)
S103 (OUT)
A
B
C
D
1
2
3
16
13
(13)
1-677-920-


【BD (MD) BOARD】(SIDE B)
B
TO DIGITAL BOARD (Page 69)
C
TO DIGITAL BOARD (Page 69)
CN102
CN103
M102 (SLED MOTOR)
M101 (SPINDLE MOTOR)
M103 (LOADING MOTOR)
CN105
RF
VC
FE
TE
GND
IOP
I+3V
CHECK PIN
S102 (REFLECT ↔ PROTECT)
A
B
C
D
1
2
3
16
13
(13)
1-677-920-

• Semiconductor Location

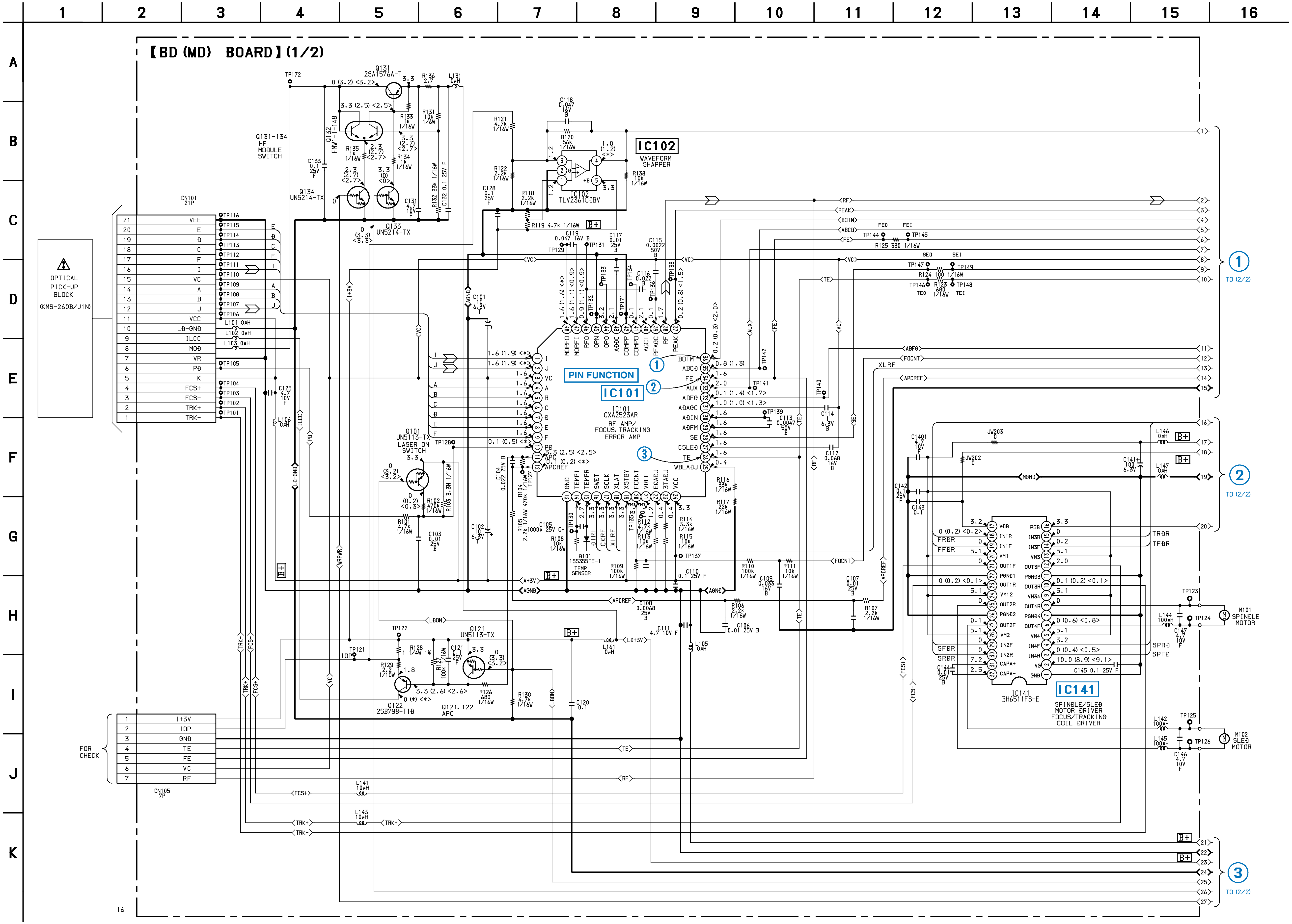
Ref. No.	Location
D101	D-3
Q101	C-3
Q131	B-3
Q132	C-3
Q133	B-3
Q134	B-3

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D181	A-1	IC181	A-2
D183	A-1	IC190	A-3
		IC195	A-3
IC101	D-1		
IC102	C-1	Q121	C-1
IC141	A-2	Q122	C-1
IC151	B-2	Q181	A-1
IC152	B-1	Q182	A-1

7-8. SCHEMATIC DIAGRAM – MD (1/2) SECTION –

• See page 50 for Waveforms. • See page 87,88 for IC Block Diagrams. • See page 96 for IC Pin Functions.



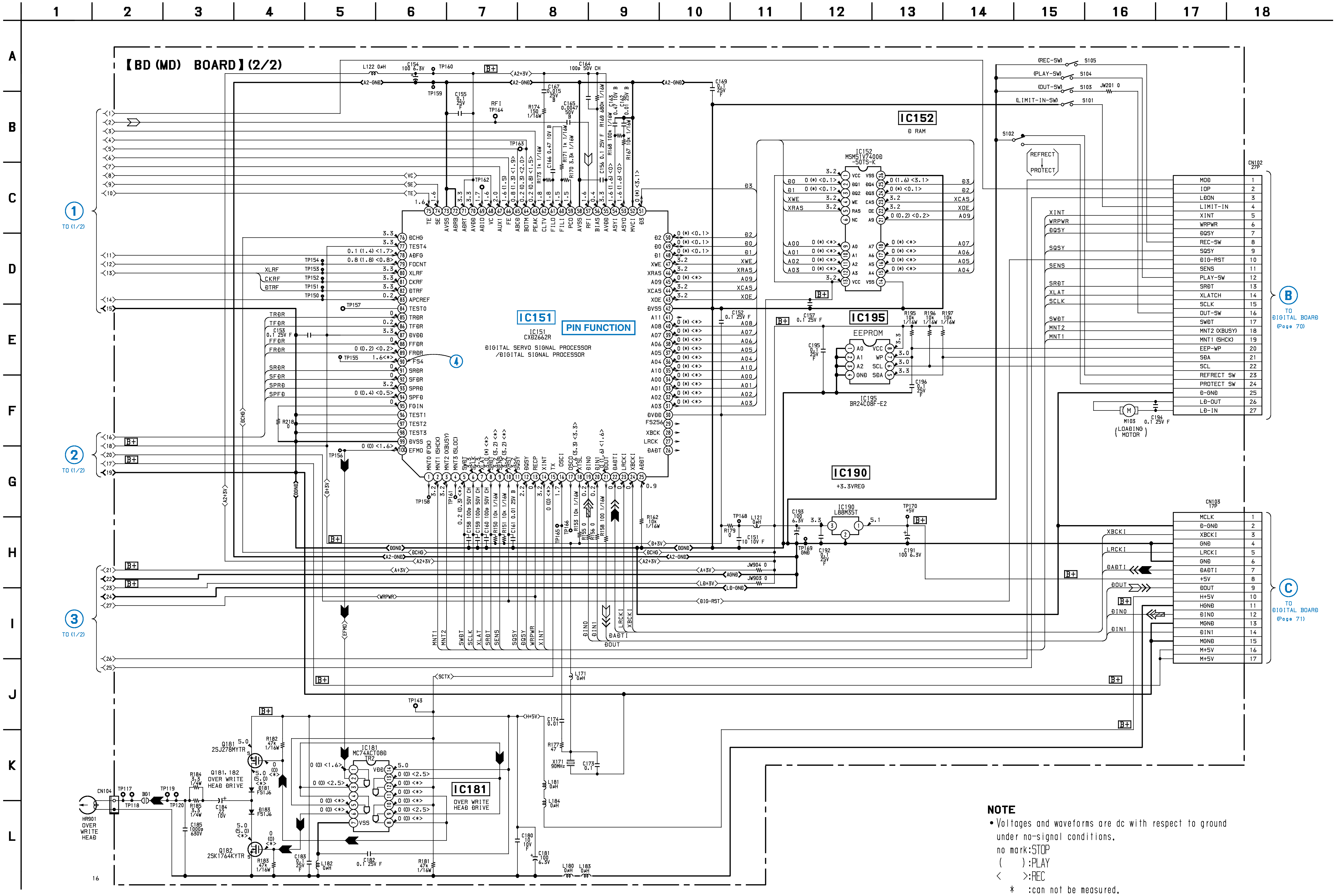
【BD (MD) BOARD】(1/2)
OPTICAL PICK-UP BLOCK (KMS-260B/J1N)
CN101 21P
Q131 2SA1576A-T
Q132 FMW1-T-148
Q131-134 HF MODULE SWITCH
Q134 UN5214-TX
Q133 UN5214-TX
IC102 WAVEFORM SHAPPER
IC102 TLV2361CDBV
PIN FUNCTION
IC101
IC101 CXA2523AR RF AMP/ FOCUS, TRACKING ERROR AMP
Q101 UN5113-TX LASER ON SWITCH
D101 1SS355TE-1 TEMP SENSOR
Q121 UN5113-TX
Q122 2SB798-T1B
Q121, 122 APC
IC141 BH6511FS-E
IC141 SPINDLE/SLED MOTOR DRIVER FOCUS/TRACKING COIL DRIVER
M101 SPINDLE MOTOR
M102 SLED MOTOR
FOR CHECK
CN105 7P
1 TO (2/2)
2 TO (2/2)
3 TO (2/2)

NOTE
• Voltages and waveforms are dc with respect to ground under no-signal conditions.

no mark:STOP
( ):PLAY
< >:REC
＊ :can not be measured.

7-9. SCHEMATIC DIAGRAM – MD (2/2) SECTION –

• See page 50 for Waveforms. • See page 88 for IC Block Diagrams. • See page 97 for IC Pin Functions.



【BD (MD) BOARD】(2/2)
IC151
CXD2662R
DIGITAL SERVO SIGNAL PROCESSOR
/DIGITAL SIGNAL PROCESSOR
PIN FUNCTION
IC152
D RAM
IC152
MSM51V7400D
-50TS-K
IC195
EEPROM
IC195
BR24C08F-E2
IC190
+3.3VREG
IC190
L88M35T
IC181
MC74ACT08D
IC181
OVER WRITE
HEAD DRIVE
Q181 2SJ278MYTR
Q181, 182
OVER WRITE
HEAD DRIVE
Q182 2SK1764KYTR
HR901
OVER
WRITE
HEAD
CN104
CN102
27P
CN103
17P
M103
(LOADING
MOTOR)
REFRECT
PROTECT
S105 (REC-SW)
S104 (PLAY-SW)
S103 (OUT-SW)
S101 (LIMIT-IN-SW)
S102
1 TO (1/2)
2 TO (1/2)
3 TO (1/2)
B TO DIGITAL BOARD (Page 70)
C TO DIGITAL BOARD (Page 71)
4

NOTE

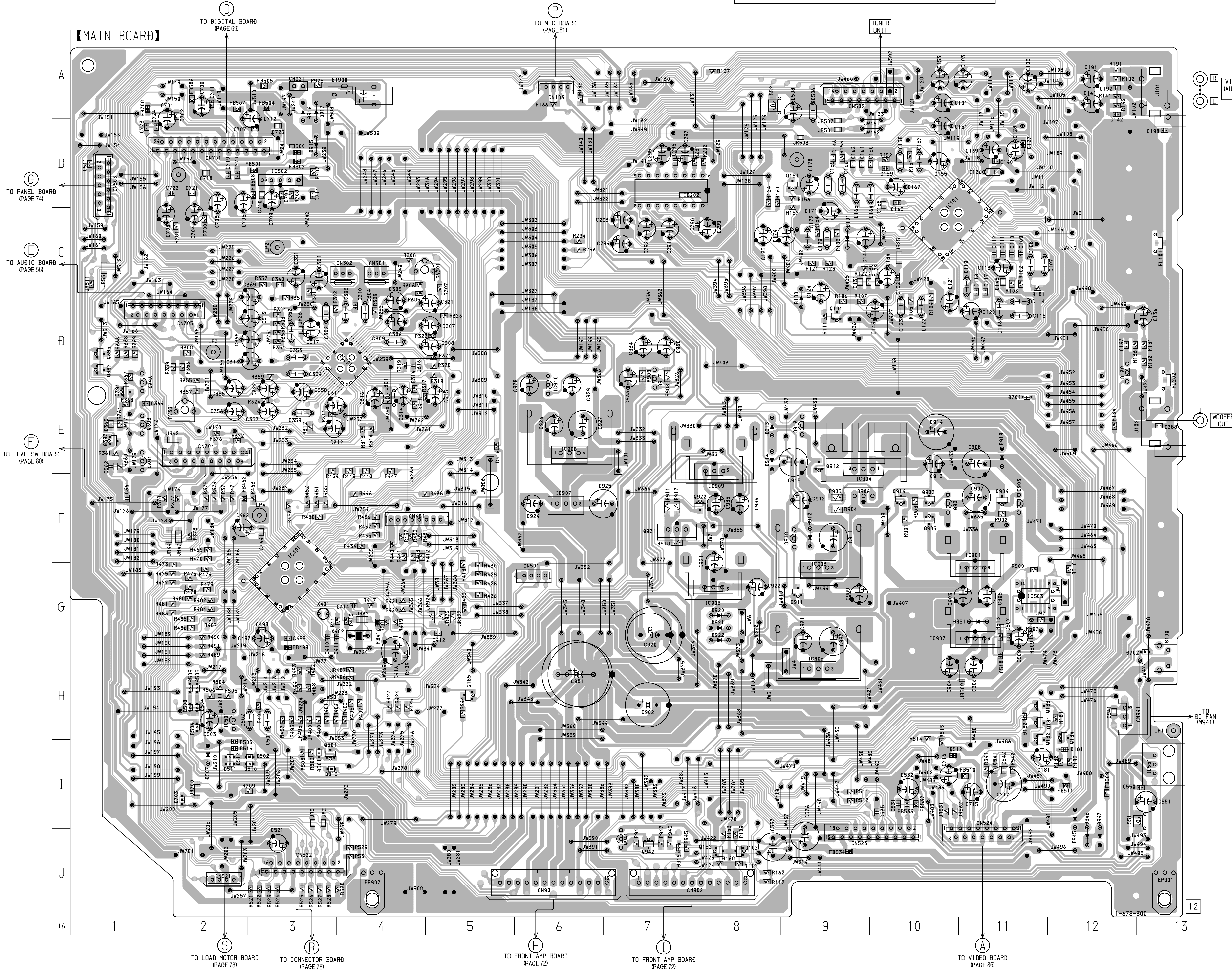
- Voltages and waveforms are dc with respect to ground under no-signal conditions.

no mark:STOP
( ):PLAY
< >:REC
＊ :can not be measured.

7-10. PRINTED WIRING BOARD – MAIN SECTION –

• See page 48 for Circuit Boards Location.

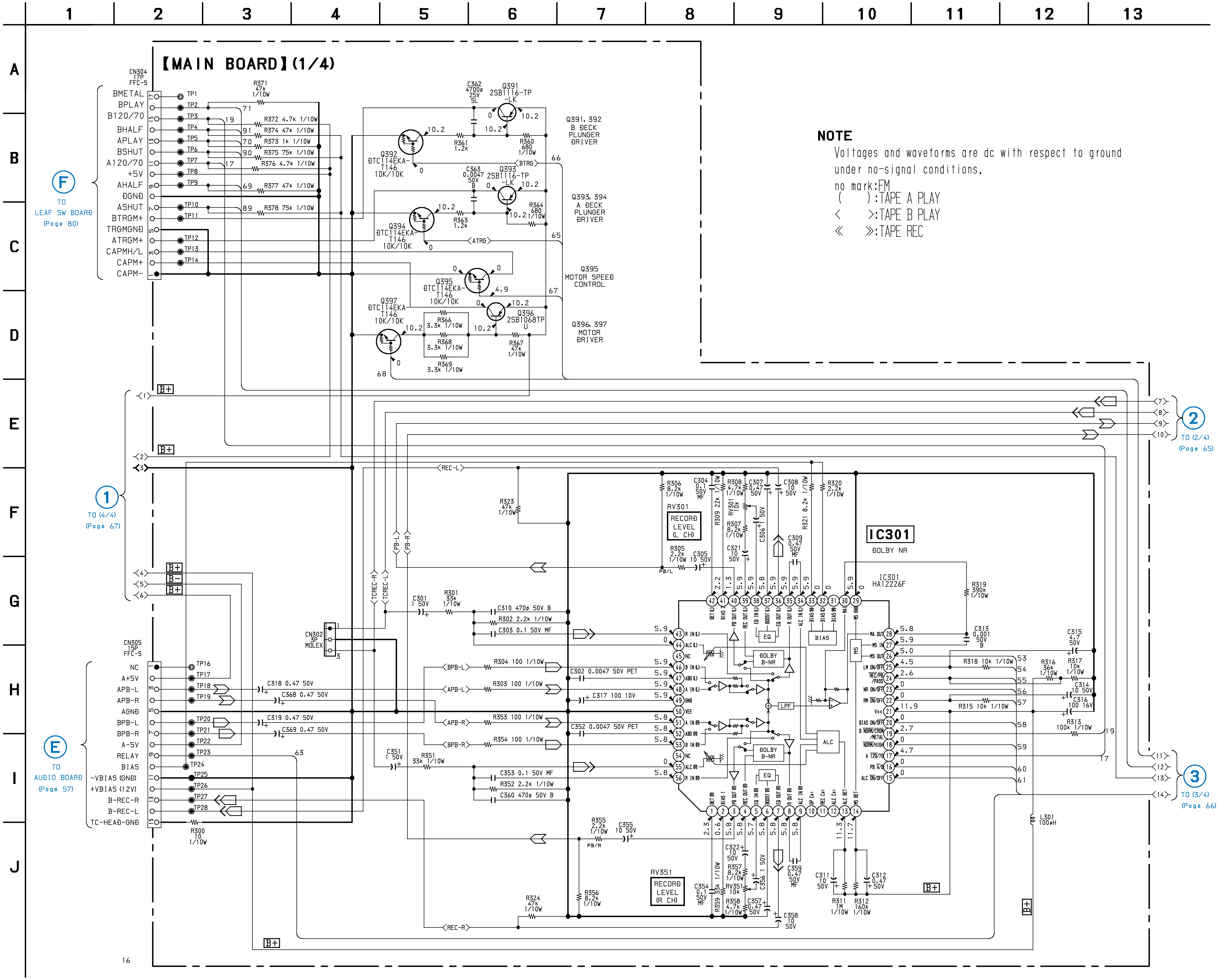
There are a few cases that the part printed on this diagram isn't mounted in this model.


【MAIN BOARD】
Ⓓ TO DIGITAL BOARD (PAGE 69)
Ⓟ TO MIC BOARD (PAGE 81)
TUNER UNIT
Ⓖ TO PANEL BOARD (PAGE 74)
Ⓔ TO AUDIO BOARD (PAGE 56)
Ⓕ TO LEAF SW BOARD (PAGE 80)
VIDEO (AUDIO) IN
R
L
WOOFER OUT
TO DC FAN (M941)
Ⓢ TO LOAD MOTOR BOARD (PAGE 78)
Ⓡ TO CONNECTOR BOARD (PAGE 78)
Ⓗ TO FRONT AMP BOARD (PAGE 72)
Ⓘ TO FRONT AMP BOARD (PAGE 72)
Ⓐ TO VIDEO BOARD (PAGE 86)
IC101
IC202
IC301
IC401
IC502
IC503
IC901
IC902
IC903
IC904
IC905
IC906
IC907
IC908
IC909
CN901
CN902
CN522
CN523
CN524
CN502
CN103
CN701
CN304
CN305
CN501
C901
C902
C920
EP901
EP902
1-678-300
12
A
B
C
D
E
F
G
H
I
J
16
1
2
3
4
5
6
7
8
9
10
11
12
13

• Semiconductor Location

Ref. No.	Location
D100	C-9
D101	C-9
D181	H-12
D182	H-11
D501	I-3
D502	I-2
D503	I-2
D504	H-2
D505	H-2
D506	H-2
D507	I-2
D508	H-2
D509	H-2
D510	I-2
D511	I-2
D512	I-2
D513	I-3
D514	I-2
D702	G-13
D703	I-2
D912	F-9
D913	E-8
D914	E-8
D915	B-3
D916	A-3
D917	A-3
D918	E-11
D919	J-7
D920	G-8
D921	G-8
D922	G-8
D945	J-12
D946	J-12
D947	J-12
D951	G-11
IC101	C-10
IC202	B-7
IC301	D-4
IC401	F-3
IC501	H-2
IC502	B-3
IC503	G-11
IC551	I-13
IC901	F-11
IC902	G-11
IC903	F-9
IC904	E-9
IC905	G-8
IC906	H-9
IC907	F-6
IC908	E-6
IC909	E-8
IC910	E-6
Q101	C-9
Q102	J-8
Q151	B-9
Q152	J-8
Q181	H-11
Q182	H-11
Q183	H-11
Q184	H-12
Q185	H-5
Q391	E-1
Q392	E-1
Q393	E-1
Q394	E-1
Q395	D-1
Q396	D-1
Q397	D-1
Q501	I-3
Q901	F-10

7-11. SCHEMATIC DIAGRAM – MAIN (1/4) SECTION –

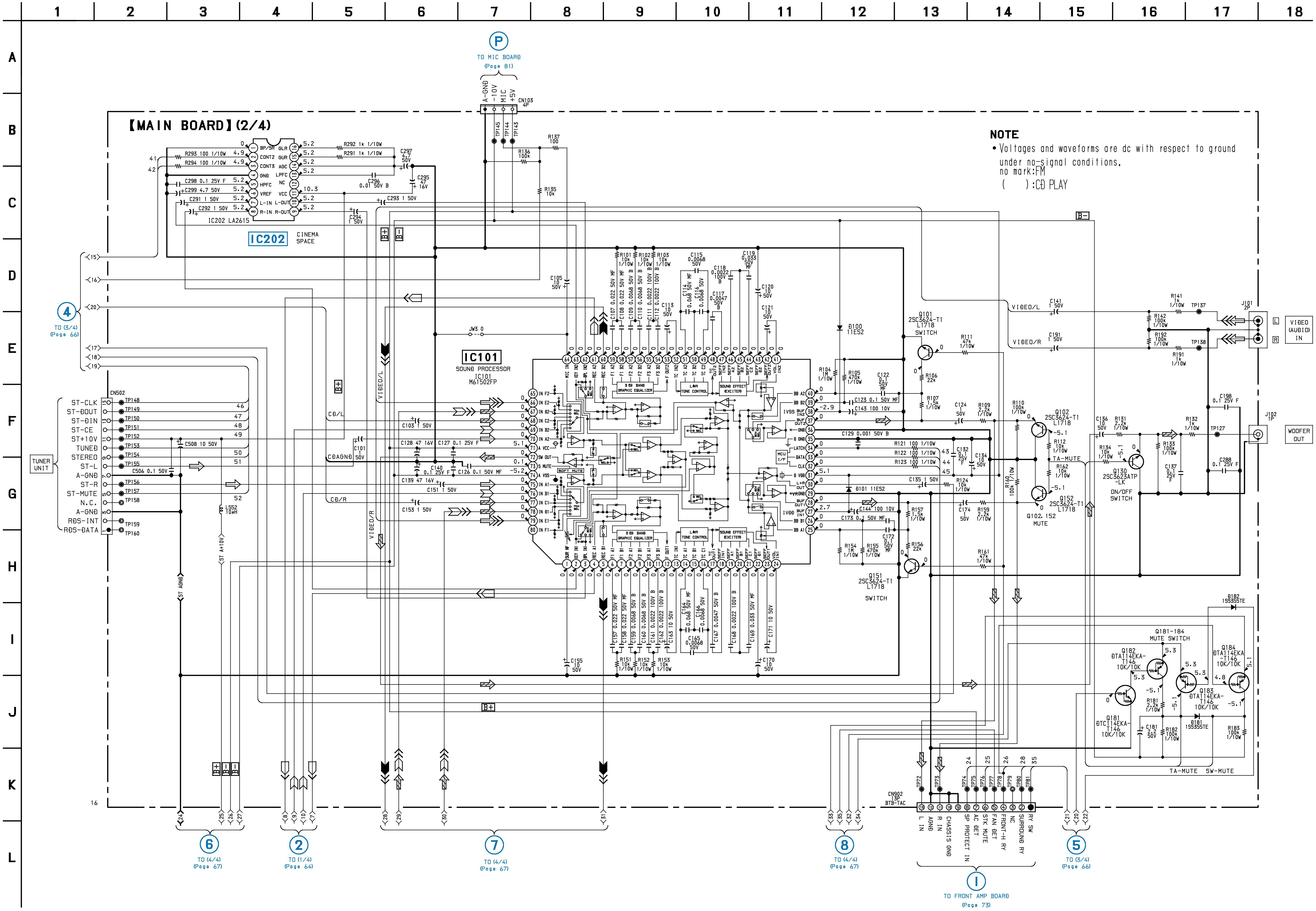


NOTE
Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark:FM
( ):TAPE A PLAY
< >:TAPE B PLAY
《 》:TAPE REC

1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
【MAIN BOARD】(1/4)
CN304 17P FFC-S
BMETAL
BPLAY
B120/70
BHALF
APLAY
BSHUT
A120/70
+5V
AHALF
DGND
ASHUT
BTRGM+
TRGMGND
ATRGM+
CAPMH/L
CAPM+
CAPM-
F
TO LEAF SW BOARD (Page 80)
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
R371 47k 1/10W
R372 4.7k 1/10W
R374 47k 1/10W
R373 1k 1/10W
R375 75k 1/10W
R376 4.7k 1/10W
R377 47k 1/10W
R378 75k 1/10W
C362 4700p 25V SL
Q391 2SB1116-TP -LK
Q391, 392 B DECK PLUNGER DRIVER
Q392 DTC114EKA-T146 10K/10K
R361 1.2k
R360 680 1/10W
C363 0.0047 50V B
Q393 2SB1116-TP -LK
Q393, 394 A DECK PLUNGER DRIVER
R364 680 1/10W
Q394 DTC114EKA-T146 10K/10K
R363 1.2k
BTRG
ATRG
Q395 DTC114EKA-T146 10K/10K
Q395 MOTOR SPEED CONTROL
Q396 2SB1068TP U
Q396, 397 MOTOR DRIVER
Q397 DTC114EKA-T146 10K/10K
R366 3.3k 1/10W
R368 3.3k 1/10W
R369 3.3k 1/10W
R367 47k 1/10W
B+
B-
1
TO (4/4) (Page 67)
2
TO (2/4) (Page 65)
3
TO (3/4) (Page 66)
REC-L
REC-R
PB-L
PB-R
TCREC-R
TCREC-L
R323 47k 1/10W
C301 1 50V
R301 33k 1/10W
C310 470p 50V B
R302 2.2k 1/10W
C303 0.1 50V MF
CN302 3P MOLEX
CN305 15P FFC-S
NC
A+5V
APB-L
APB-R
AGND
BPB-L
BPB-R
A-5V
RELAY
BIAS
-VBIAS (GND)
+VBIAS (12V)
B-REC-R
B-REC-L
TC-HEAD-GND
E
TO AUDIO BOARD (Page 57)
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP24
TP25
TP26
TP27
TP28
C318 0.47 50V
C368 0.47 50V
C319 0.47 50V
C369 0.47 50V
C351 1 50V
R351 33k 1/10W
R300 10 1/10W
BPB-L
APB-L
APB-R
BPB-R
R304 100 1/10W
R303 100 1/10W
R353 100 1/10W
R354 100 1/10W
C302 0.0047 50V PET
C317 100 10V
C352 0.0047 50V PET
C353 0.1 50V MF
R352 2.2k 1/10W
C360 470p 50V B
R306 8.2k 1/10W
C304 0.1 50V MF
R308 4.7k 1/10W
C307 0.47 50V
C308 10 50V
R320 2.2k 1/10W
RV301
RECORD LEVEL (L CH)
R309 22k 1/10W
R307 8.2k 1/10W
C306
R321 8.2k 1/10W
C309 0.47 50V MF
R305 2.2k 1/10W
C305 10 50V
C321 10 50V
IC301
DOLBY NR
IC301 HA12226F
R319 390k 1/10W
C313 0.001 50V B
C315 4.7 50V
R318 10k 1/10W
R316 36k 1/10W
R317 10k 1/10W
C314 10 50V
C316 100 16V
R315 10k 1/10W
R313 100k 1/10W
EQ
BIAS
DOLBY B-NR
LPF
ALC
MS
R355 2.2k 1/10W
C355 10 50V
PB/R
PB/L
RV351
RECORD LEVEL (R CH)
C322 10 50V
R357 8.2k 1/10W
C356 1 50V
C359 0.47 50V MF
C354 0.1 50V MF
R359 22k 1/10W
R358 4.7k 1/10W
C357 0.47 50V
C358 10 50V
R356 8.2k 1/10W
R324 47k 1/10W
C311 10 50V
C312 0.47 50V
R311 1M 1/10W
R312 160k 1/10W
L301 100μH
16

7-12. SCHEMATIC DIAGRAM – MAIN (2/4) SECTION –

• See page 89 for IC Block Diagrams.

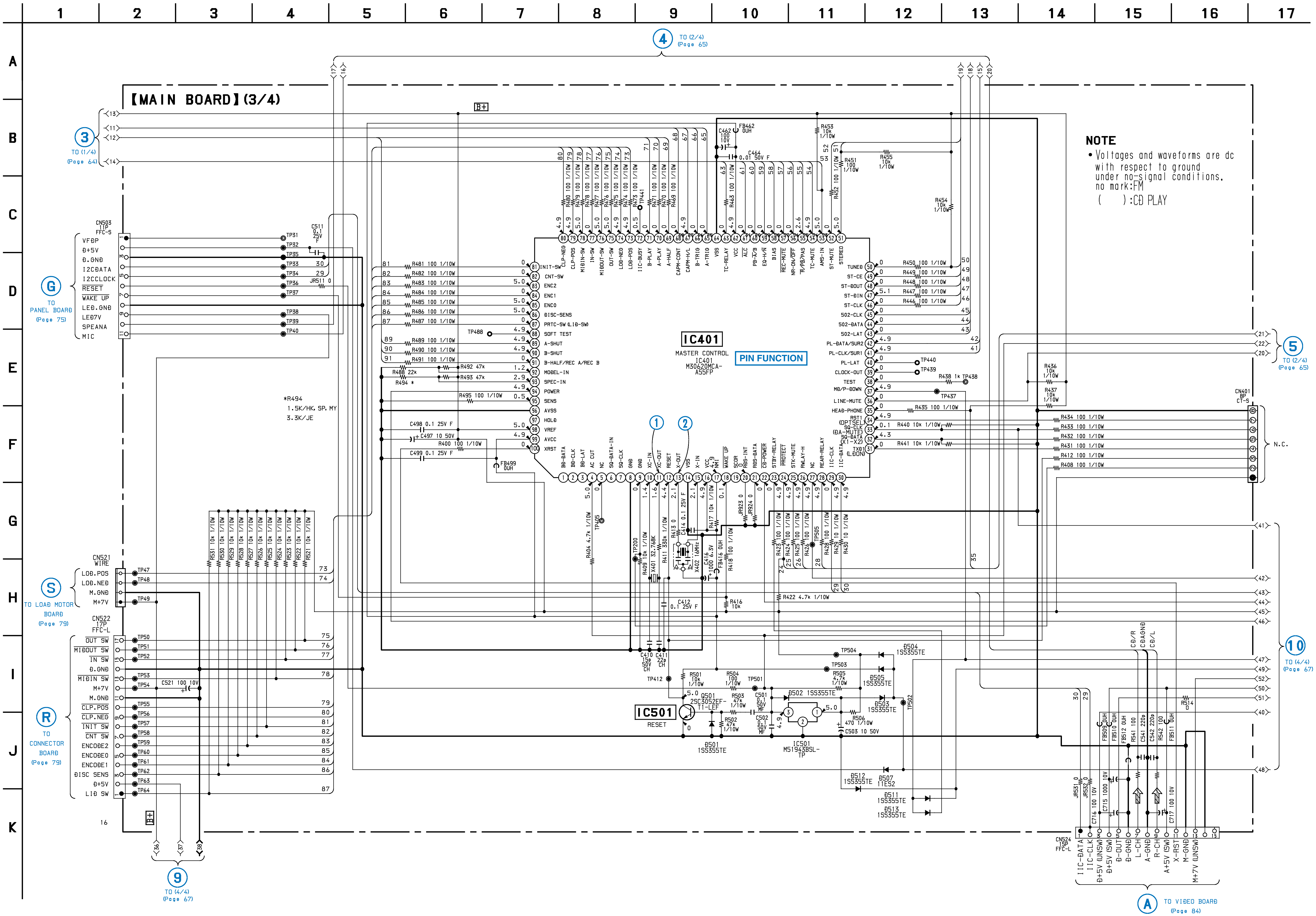

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
L
P
TO MIC BOARD
(Page 81)
A-GND
-10V
MIC
+5V
CN103
4P
TP145
TP144
TP143
【MAIN BOARD】(2/4)
R293 100 1/10W
R294 100 1/10W
R292 1k 1/10W
R291 1k 1/10W
C297 4.7 50V
C295 47 16V
C296 0.01 50V B
C298 0.1 25V F
C299 4.7 50V
C291 1 50V
C292 1 50V
C293 1 50V
C294 1 50V
IC202 LA2615
IC202
CINEMA SPACE
R137 100
R136 100k
R135 10k
4
TO (3/4)
(Page 66)
IC101
SOUND PROCESSOR
IC101
M61502FP
JW3 0
C105 10 50V
R101 10k 1/10W
R102 10k 1/10W
R103 10k 1/10W
C115 0.0068 50V
C118 0.0022 100V B
C117 0.0047 50V B
C119 0.033 50V MF
C120 10 50V
C121 10 50V
C113 10 50V
3 EQ BAND GRAPHIC EQUALIZER
L&R TONE CONTROL
SOUND EFFECT EXCITER
SOFT MUTE
D100 11ES2
R104 1M 1/10W
R105 470k 1/10W
C122 0.1 50V MF
R106 22k
R107 1.5k 1/10W
C123 0.1 50V MF
C143 100 10V
C129 0.001 50V B
R121 100 1/10W
R122 100 1/10W
R123 100 1/10W
C132 0.1 25V F
C134 10 50V
C135 1 50V
D101 11ES2
C144 100 10V
C173 0.1 50V MF
R157 1.5k 1/10W
C172 0.1 50V MF
R154 1M 1/10W
R155 470k 1/10W
R156 22k
Q151
2SC3624-T1
L1718
SWITCH
Q101
2SC3624-T1
L1718
SWITCH
R111 47k 1/10W
C124 1 50V
R109 2.2k 1/10W
R110 100k 1/10W
R124 10k 1/10W
C174 1 50V
R159 2.2k 1/10W
R161 47k 1/10W
R160 100k 1/10W
Q102
2SC3624-T1
L1718
R112 10k 1/10W
TA-MUTE
R162 10k 1/10W
Q152
2SC3624-T1
L1718
Q102, 152
MUTE
C136 10 50V
R131 2.2k 1/10W
R134 10k 1/10W
R133 100k 1/10W
C137 0.1 25V F
R132 1k 1/10W
Q130
2SC3623ATP
-LK
ON/OFF SWITCH
C198 0.1 25V F
C288 0.1 25V F
TP127
J102 1P
WOOFER OUT
VIDEO/L
VIDEO/R
C141 1 50V
C191 1 50V
R141 1k 1/10W
R142 100k 1/10W
R192 100k 1/10W
R191 1k 1/10W
TP137
TP138
J101 2P
L
R
VIDEO (AUDIO) IN
CN502
ST-CLK
ST-DOUT
ST-DIN
ST-CE
ST+10V
TUNED
STEREO
ST-L
A-GND
ST-R
ST-MUTE
N.C.
A-GND
RDS-INT
RDS-DATA
TUNER UNIT
TP148
TP149
TP150
TP151
TP152
TP153
TP154
TP155
TP156
TP157
TP158
TP159
TP160
C508 10 50V
C506 0.1 50V
L552 10µH
ST A+10V
ST AGND
CD/L
CD/R
CDAGND
C101 1 50V
C103 1 50V
C128 47 16V
C127 0.1 25V F
C140 0.1 25V F
C126 0.1 50V MF
C139 47 16V
C151 1 50V
C153 1 50V
C155 10 50V
C170 10 50V
R151 10k 1/10W
R152 10k 1/10W
R153 10k 1/10W
C165 0.0068 50V
Q181-184
MUTE SWITCH
Q182
DTA114EKA-T146
10K/10K
Q184
DTA114EKA-T146
10K/10K
Q183
DTA114EKA-T146
10K/10K
Q181
DTC114EKA-T146
10K/10K
D182 1SS355TE
D181 1SS355TE
R181 2.2k 1/10W
C181 2.2 50V
R182 100k 1/10W
R183 100k 1/10W
TA-MUTE
SW-MUTE
CN902
13P
BTB-TAC
L IN
R IN
AGND
CHASSIS GND
SP PROTECT IN
AC DET
STK MUTE
FAN DET
FRONT-H RY
NC
SURROUND RY
RY SW
TP172
TP173
TP174
TP175
TP176
TP177
TP178
TP179
TP180
TP181
6
TO (4/4)
(Page 67)
2
TO (1/4)
(Page 64)
7
TO (4/4)
(Page 67)
8
TO (4/4)
(Page 67)
5
TO (3/4)
(Page 66)
I
TO FRONT AMP BOARD
(Page 73)
B+
B-

NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark:FM
  ( ):CD PLAY

7-13. SCHEMATIC DIAGRAM – MAIN (3/4) SECTION –

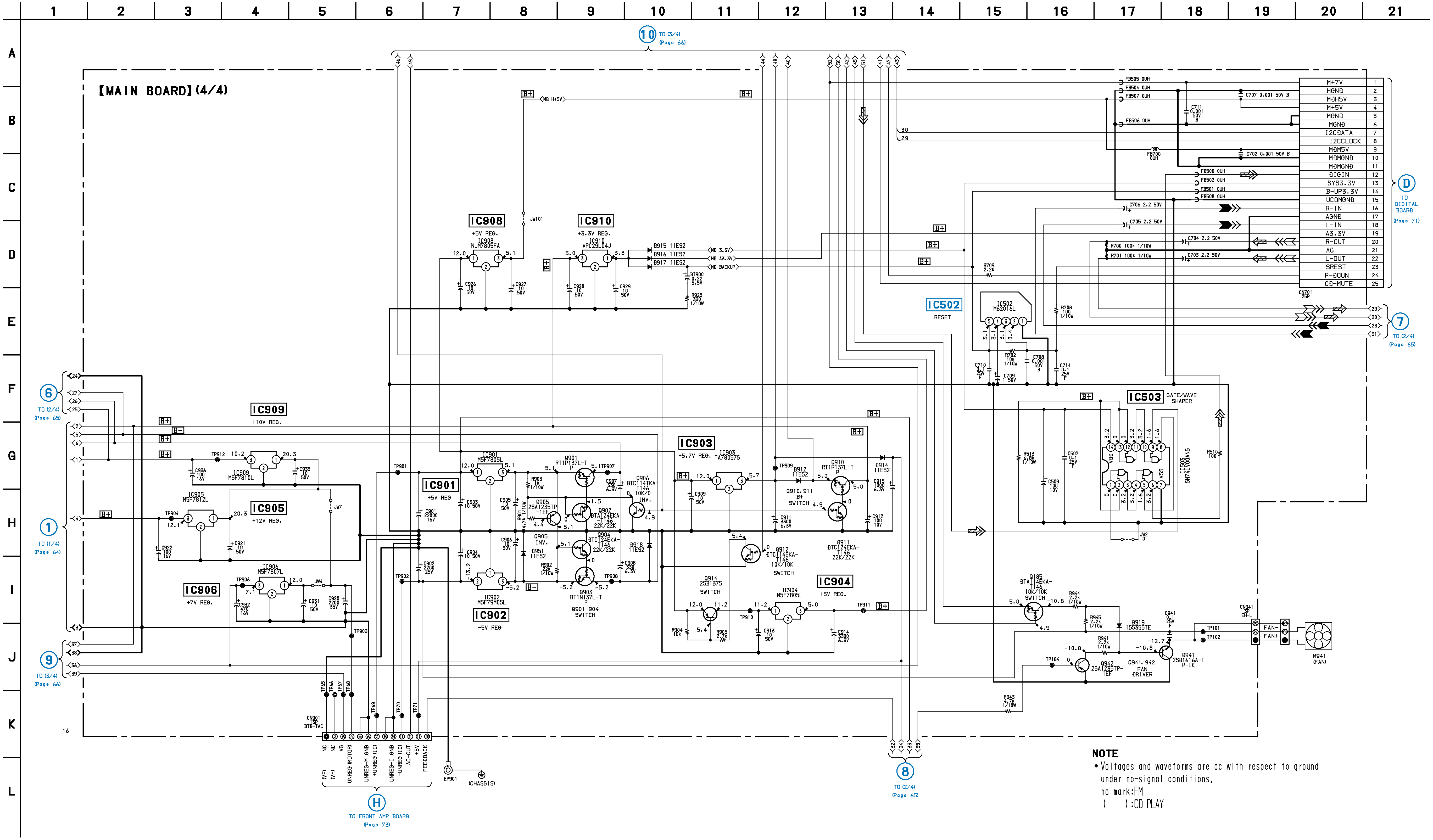
• See page 50 for Waveforms. • See page 101 for IC Pin Functions.


【MAIN BOARD】(3/4)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K
4 TO (2/4) (Page 65)
3 TO (1/4) (Page 64)
G TO PANEL BOARD (Page 75)
S TO LOAD MOTOR BOARD (Page 79)
R TO CONNECTOR BOARD (Page 79)
9 TO (4/4) (Page 67)
5 TO (2/4) (Page 65)
10 TO (4/4) (Page 67)
A TO VIDEO BOARD (Page 84)
CN503 11P FFC-S
VFDP
D+5V
D.GND
I2CDATA
I2CCLOCK
RESET
WAKE UP
LED.GND
LED7V
SPEANA
MIC
CN521 WIRE
LOD.POS
LOD.NEG
M.GND
M+7V
CN522 17P FFC-L
OUT SW
MIDOUT SW
IN SW
D.GND
MIDIN SW
M+7V
M.GND
CLP.POS
CLP.NEG
INIT SW
CNT SW
ENCODE2
ENCODE0
ENCODE1
DISC SENS
D+5V
LID SW
IC401
MASTER CONTROL
IC401
M30620MCA-A55FP
PIN FUNCTION
IC501
RESET
IC501 M51943BSL-TP
Q501 2SC3052EF-T1-LEF
D501 1SS355TE
D502 1SS355TE
D503 1SS355TE
D504 1SS355TE
D505 1SS355TE
D507 11ES2
D511 1SS355TE
D512 1SS355TE
D513 1SS355TE
X401 32.768K
X402 16MHz
CN401 8P CT-S
N.C.
CN524 15P FFC-L
IIC-DATA
IIC-CLK
D+5V (UNSW)
D+5V (SW)
D-OUT
D-GND
L-CH
A-GND
R-CH
A+5V (SW)
X-RST
M-GND
M+7V (UNSW)
*R494
1.5K/HK, SP, MY
3.3K/JE
B+

NOTE
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark:FM
  ( ):CD PLAY

7-14. SCHEMATIC DIAGRAM – MAIN (4/4) SECTION –

• See page 89 for IC Block Diagrams.


【MAIN BOARD】(4/4)
IC908
+5V REG.
IC908 NJM7805FA
IC910
+3.3V REG.
IC910 μPC29L04J
D915 11ES2
D916 11ES2
D917 11ES2
BT900 0.22 5.5V
IC909
+10V REG.
IC909 M5F7810L
IC905
+12V REG.
IC905 M5F7812L
IC906
+7V REG.
IC906 M5F7807L
IC901
+5V REG
IC901 M5F7805L
IC902
-5V REG
IC902 M5F79M05L
Q901 RT1P137L-T
Q902 BTA124EKA-T146 22K/22K
Q903 RT1N137L-T
Q904 DTC124EKA-T146 22K/22K
Q905 2SA1235TP-1EF
Q905 INV.
Q906 DTC114TKA-T146 10K/0 INV.
Q901-904 SWITCH
D918 11ES2
D951 11ES2
IC903
+5.7V REG.
IC903 TA78057S
D912 11ES2
D914 11ES2
Q910 RT1P137L-T
Q910, 911 B+ SWITCH
Q911 DTC124EKA-T146 22K/22K
Q912 DTC114EKA-T146 10K/10K SWITCH
Q914 2SB1375 SWITCH
IC904
+5V REG.
IC904 M5F7805L
IC502
RESET
IC502 M62016L
IC503
GATE/WAVE SHAPER
IC503 SN74LV00ANS
Q185 BTA114EKA-T146 10K/10K SWITCH
D919 1SS355TE
Q941 2SD1616A-T P-LK
Q942 2SA1235TP-1EF
Q941, 942 FAN DRIVER
CN941 3P EH-L
FAN-
FAN+
M941 (FAN)
CN701 25P
M+7V
HGND
MDH5V
M+5V
MGND
MGND
I2CDATA
I2CCLOCK
MDM5V
MDMGND
MDMGND
DIGIN
SYS3.3V
B-UP3.3V
UCOMGND
R-IN
AGND
L-IN
A3.3V
R-OUT
AG
L-OUT
SREST
P-DOWN
CD-MUTE
D TO DIGITAL BOARD (Page 71)
10 TO (3/4) (Page 66)
6 TO (2/4) (Page 65)
1 TO (1/4) (Page 64)
9 TO (3/4) (Page 66)
7 TO (2/4) (Page 65)
8 TO (2/4) (Page 65)
CN901 13P BTB-TAC
NC
NC
VG
UNREG (MOTOR)
UNREG-M GND
+UNREG (IC)
UNREG-I GND
-UNREG (IC)
AC-CUT
+5V
FEEDBACK
(VF)
(VF)
EP901
(CHASSIS)
H TO FRONT AMP BOARD (Page 73)
JW101
JW7
JW4
JW2

NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.

no mark:FM

( ) :CD PLAY

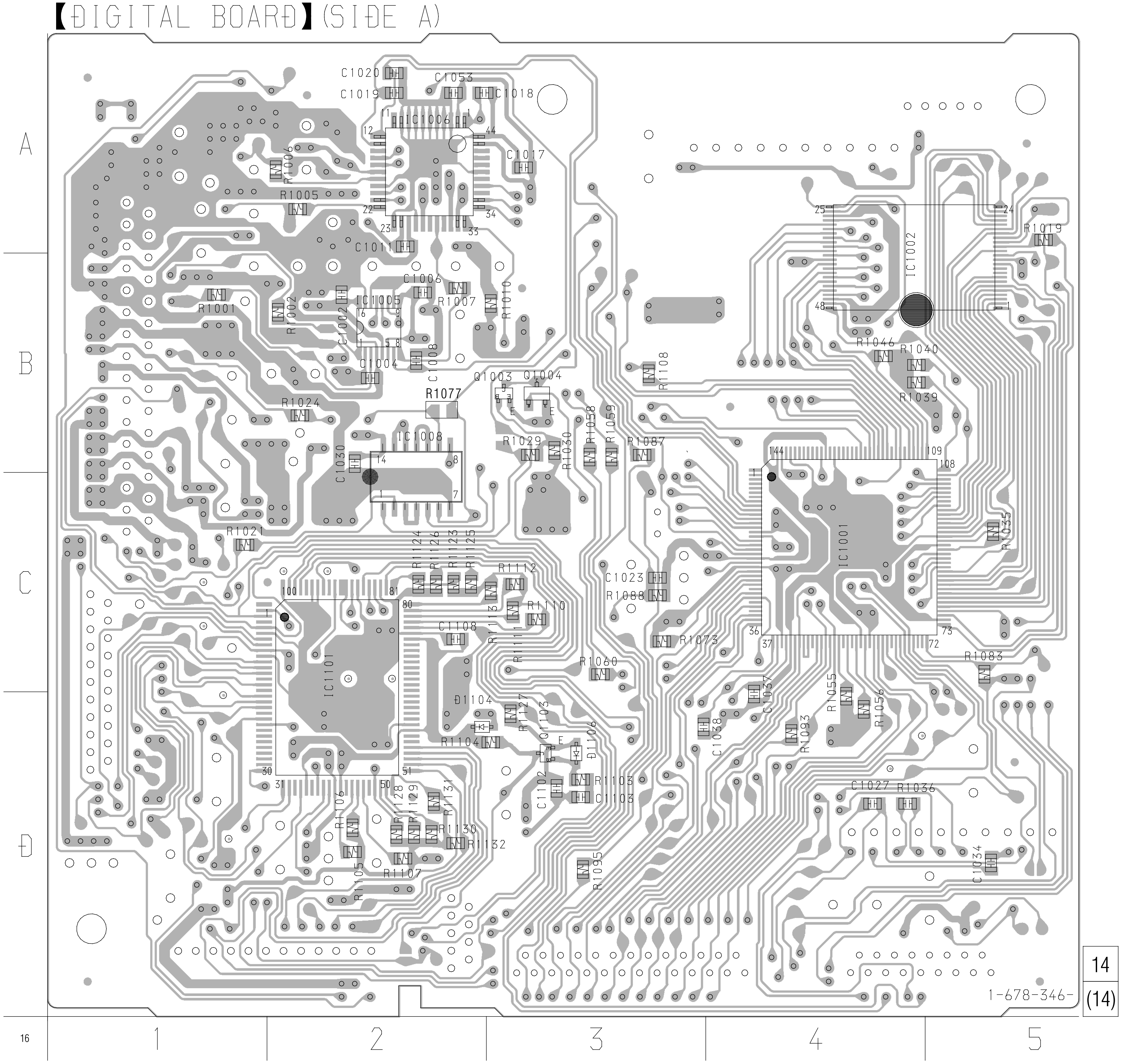
7-15. PRINTED WIRING BOARD – DIGITAL (SIDE A) SECTION –

- See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.

- **Semiconductor Location**

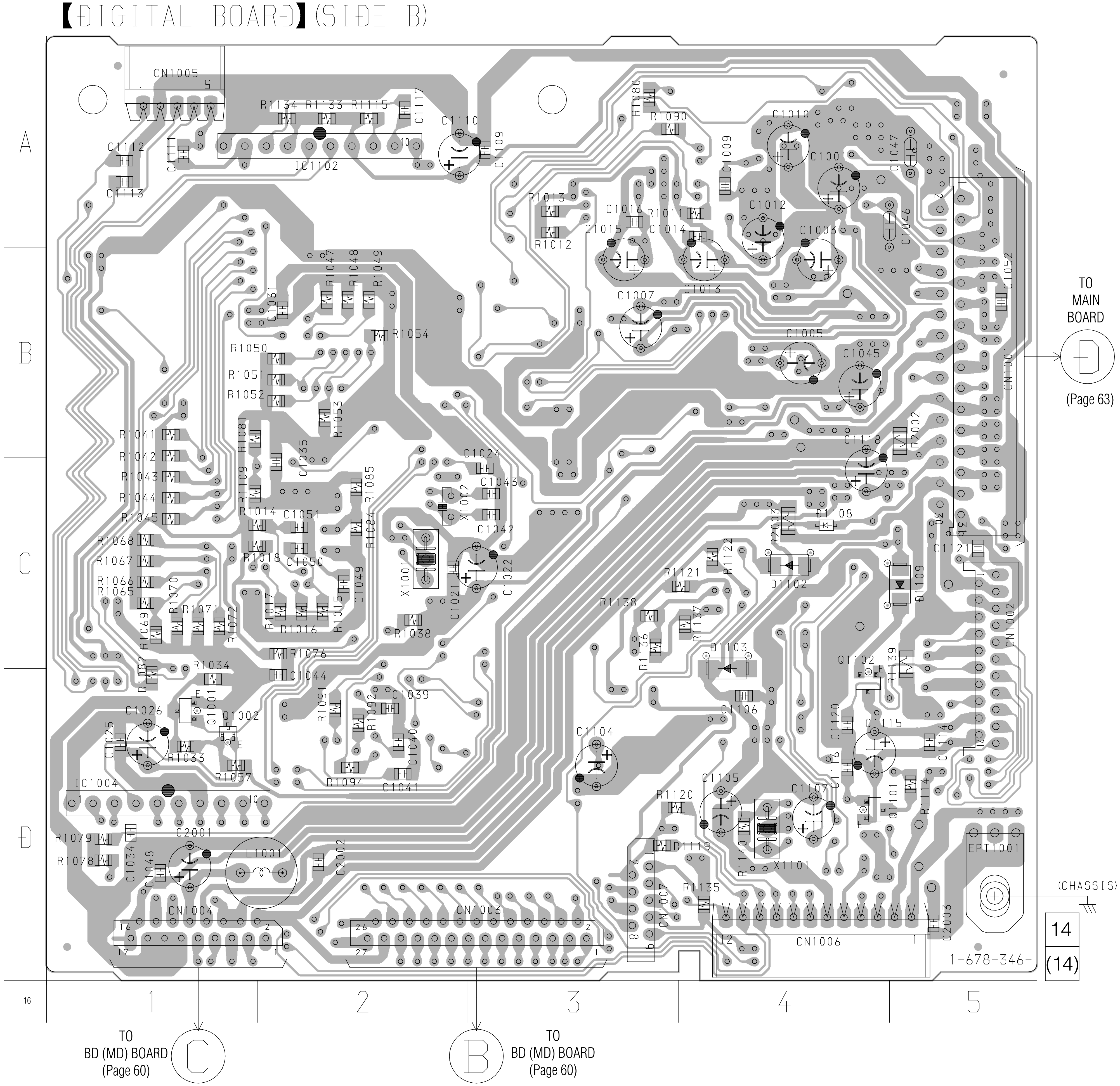
Ref. No.	Location
IC1001	C-4
IC1002	B-4
IC1005	B-2
IC1006	A-2
Q1003	B-3
Q1004	B-3


【DIGITAL BOARD】(SIDE A)
A
B
C
D
1
2
3
4
5
16
C1020
C1019
C1053
C1018
IC1006
C1017
R1006
R1005
C1011
C1006
R1007
R1010
IC1005
R1001
R1002
C1002
C1004
C1008
Q1003
Q1004
R1077
R1024
IC1008
C1030
R1029
R1030
R1058
R1059
R1087
R1108
IC1002
R1019
R1046
R1040
R1039
IC1001
R1035
R1021
R1124
R1126
R1123
R1125
R1112
R1113
R1110
R1111
C1108
IC1101
D1104
R1127
Q1103
D1106
R1104
C1102
R1103
C1103
R1106
R1128
R1129
R1131
R1130
R1132
R1105
R1107
R1095
C1023
R1088
R1073
R1060
C1037
C1038
R1093
R1055
R1056
R1083
C1027
R1036
C1034
1-678-346-
14
(14)

7-16. PRINTED WIRING BOARD – DIGITAL (SIDE B) SECTION –

- See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.

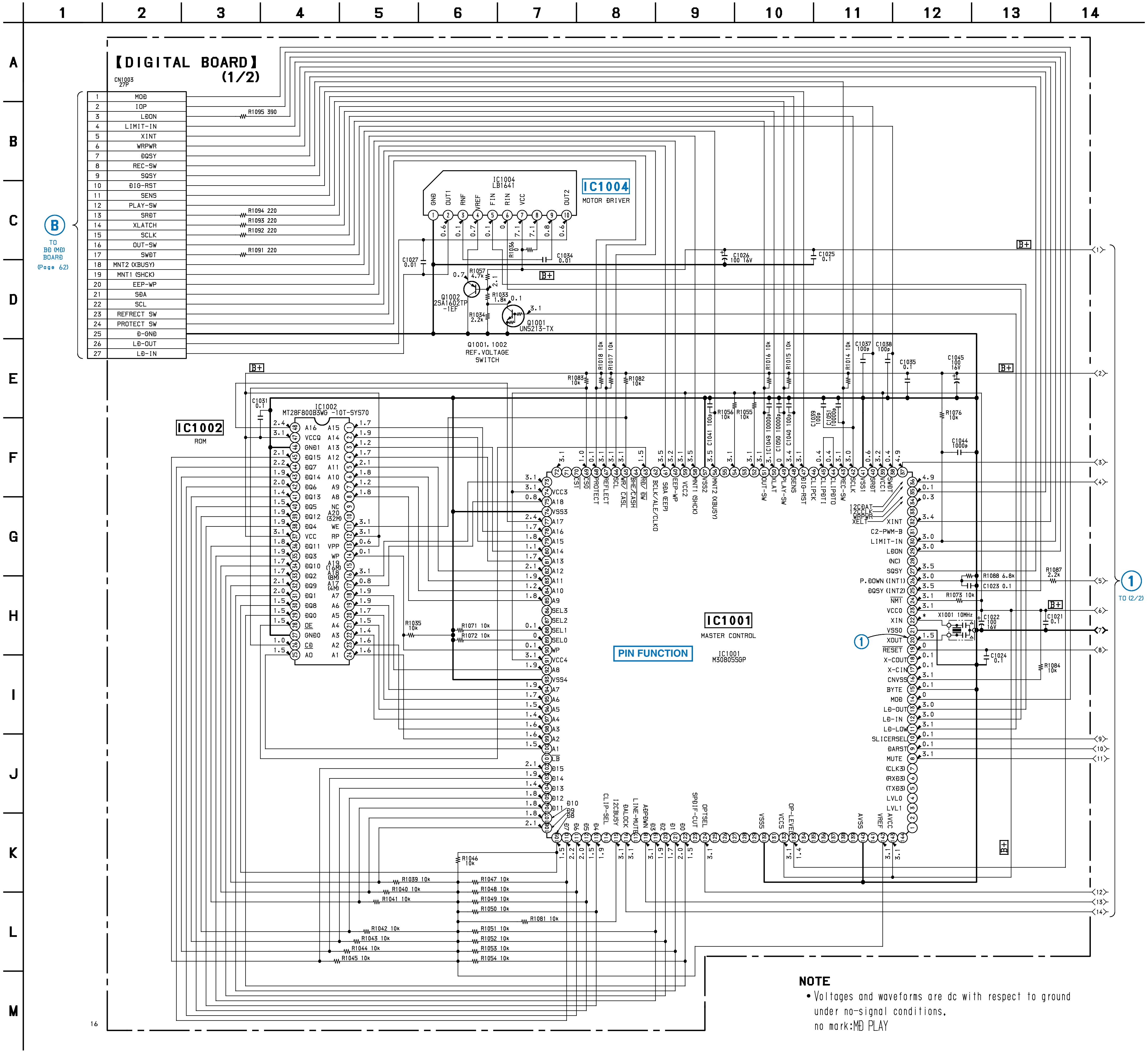

【DIGITAL BOARD】(SIDE B)
CN1005
1
5
R1134
R1133
R1115
C1117
C1110
C1109
IC1102
1
10
C1112
C1111
C1113
R1080
R1090
C1010
C1009
C1001
C1047
C1046
R1013
R1012
C1016
C1015
R1011
C1014
C1012
C1003
C1007
C1013
C1005
C1045
C1052
CN1001
1
2
30
29
R1047
R1048
R1049
C1031
R1054
R1050
R1051
R1052
R1053
R1081
C1035
R1041
R1042
R1043
R1044
R1045
R1109
R1014
C1051
R1085
R1084
C1024
C1043
X1002
C1042
R1068
R1067
R1066
R1065
R1018
C1050
C1049
X1001
C1021
C1022
R1070
R1071
R1072
R1069
R1017
R1016
R1015
R1038
R1076
C1044
R1082
R1034
C1026
Q1001
Q1002
E
R1091
R1092
C1039
C1040
C1025
R1033
R1057
R1094
C1041
IC1004
1
10
R1079
R1078
C1034
C1048
C2001
L1001
C2002
CN1004
16
2
17
1
CN1003
26
2
27
1
C1118
R2002
R2003
D1108
C1121
R1121
R1122
D1102
D1109
R1138
R1137
R1136
D1103
Q1102
R1139
CN1002
C1106
C1104
C1120
C1115
C1114
C1116
C1105
C1107
R1120
R1119
R1140
X1101
Q1101
R1114
R1135
CN1007
2
8
9
CN1006
12
1
C2003
EPT1001
(CHASSIS)
1-678-346-
14
(14)
A
B
C
D
1
2
3
4
5
16
TO
MAIN
BOARD
D
(Page 63)
TO
BD (MD) BOARD
C
(Page 60)
TO
BD (MD) BOARD
B
(Page 60)

- **Semiconductor Location**

Ref. No.	Location
IC1004	D-1
Q1001	D-1
Q1002	D-1

7-17. SCHEMATIC DIAGRAM – DIGITAL (1/2) SECTION –

• See page 50 for Waveforms. • See page 92 for IC Block Diagrams. • See page 99 for IC Pin Functions.



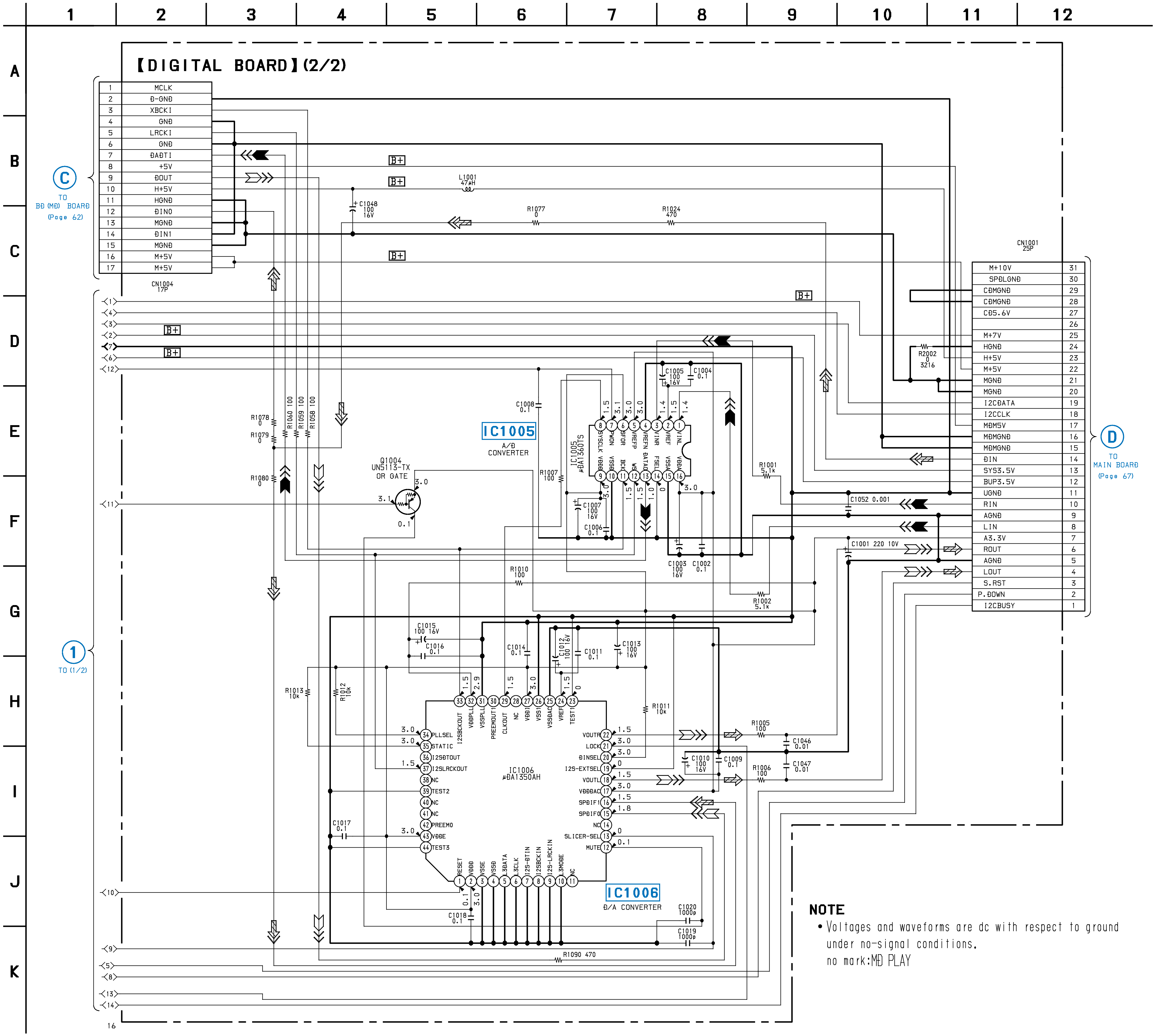
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I J K L M
【DIGITAL BOARD】 (1/2)
CN1003 27P
1 MOD
2 IOP
3 LDON
4 LIMIT-IN
5 XINT
6 WRPWR
7 DQSY
8 REC-SW
9 SQSY
10 DIG-RST
11 SENS
12 PLAY-SW
13 SRDT
14 XLATCH
15 SCLK
16 OUT-SW
17 SWDT
18 MNT2 (XBUSY)
19 MNT1 (SHCK)
20 EEP-WP
21 SDA
22 SCL
23 REFRECT SW
24 PROTECT SW
25 D-GND
26 LD-OUT
27 LD-IN
B TO BD (MD) BOARD (Page 62)
R1095 390
R1094 220
R1093 220
R1092 220
R1091 220
IC1004 LB1641
IC1004 MOTOR DRIVER
GND OUT1 RNF VREF FIN RIN VCC OUT2
C1027 0.01
C1034 0.01
C1026 100 16V
C1025 0.1
R1057 4.7k
Q1002 2SA1602TP-1EF
R1033 1.8k
R1034 2.2k
Q1001 UN5213-TX
Q1001, 1002 REF.VOLTAGE SWITCH
B+
IC1002 ROM
IC1002 MT28F800B3WG-10T-SYS70
C1031 0.1
IC1001 MASTER CONTROL
IC1001 M30805SGP
PIN FUNCTION
X1001 10MHz
R1035 10k
R1071 10k
R1072 10k
R1046 10k
R1039 10k
R1040 10k
R1041 10k
R1042 10k
R1043 10k
R1044 10k
R1045 10k
R1047 10k
R1048 10k
R1049 10k
R1050 10k
R1051 10k
R1052 10k
R1053 10k
R1054 10k
R1081 10k
R1083 10k
R1082 10k
R1018 10k
R1017 10k
R1016 10k
R1015 10k
R1014 10k
R1056 10k
R1055 10k
R1076 10k
R1088 6.8k
R1087 2.2k
R1073 10k
R1084 10k
C1037 100p
C1038 100p
C1035 0.1
C1045 100 16V
C1044 1000p
C1023 0.1
C1022 100 16V
C1021 0.1
C1024 0.1
1 TO (2/2)
16

NOTE

• Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark:MD PLAY

7-18. SCHEMATIC DIAGRAM – DIGITAL (2/2) SECTION –

• See page 92 for IC Block Diagrams.


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
K
【DIGITAL BOARD】(2/2)
C
TO
BD (MD) BOARD
(Page 62)
CN1004
17P
1 MCLK
2 D-GND
3 XBCKI
4 GND
5 LRCKI
6 GND
7 DADTI
8 +5V
9 DOUT
10 H+5V
11 HGND
12 DIN0
13 MGND
14 DIN1
15 MGND
16 M+5V
17 M+5V
B+
L1001
47μH
C1048
100
16V
R1077
0
R1024
470
CN1001
25P
M+10V 31
SPDLGND 30
CDMGND 29
CDMGND 28
CD5.6V 27
26
M+7V 25
HGND 24
H+5V 23
M+5V 22
MGND 21
MGND 20
I2CDATA 19
I2CCLK 18
MDM5V 17
MDMGND 16
MDMGND 15
DIN 14
SYS3.5V 13
BUP3.5V 12
UGND 11
RIN 10
AGND 9
LIN 8
A3.3V 7
ROUT 6
AGND 5
LOUT 4
S.RST 3
P.DOWN 2
I2CBUSY 1
D
TO
MAIN BOARD
(Page 67)
R2002
0
3216
C1005
100
16V
C1004
0.1
IC1005
A/D
CONVERTER
IC1005
μDA1360TS
SYSCLK
PWON
SFOR
VREFN
DATAO
VINR
VREF
VINL
VDDD
VSSD
BCK
WS
FSEL
VSSA
VDDA
R1078
0
R1079
0
R1060 100
R1059 100
R1058 100
R1080
0
Q1004
UN5113-TX
OR GATE
C1008
0.1
R1007
100
C1007
100
16V
C1006
0.1
R1001
5.1k
C1052 0.001
C1001 220 10V
C1003
100
16V
C1002
0.1
R1010
100
R1002
5.1k
1
TO (1/2)
C1015
100 16V
C1016
0.1
C1014
0.1
C1012
100 16V
C1011
0.1
C1013
100
16V
R1013
10k
R1012
10k
R1011
10k
R1005
100
C1046
0.01
C1010
100
16V
C1009
0.1
R1006
100
C1047
0.01
IC1006
μDA1350AH
PLLSEL
STATIC
I2SDOUT
I2SLRCKOUT
NC
TEST2
NC
NC
PREEMO
VDDE
TEST3
I2SBCKOUT
VDDPLL
VSSPLL
PREEMOUT
CLKOUT
NC
VDDI
VSSI
VSSDAC
VREF
TEST1
VOUTR
LOCK
DINSEL
I2S-EXTSEL
VOUTL
VDDDAC
SPDIF1
SPDIF0
NC
SLICER-SEL
MUTE
RESET
VDDD
VSSE
VSSD
L3DATA
L3CLK
I2S-DTIN
I2S-BCKIN
I2S-LRCKIN
L3MODE
NC
C1017
0.1
C1018
0.1
IC1006
D/A CONVERTER
C1020
1000p
C1019
1000p
R1090 470
16

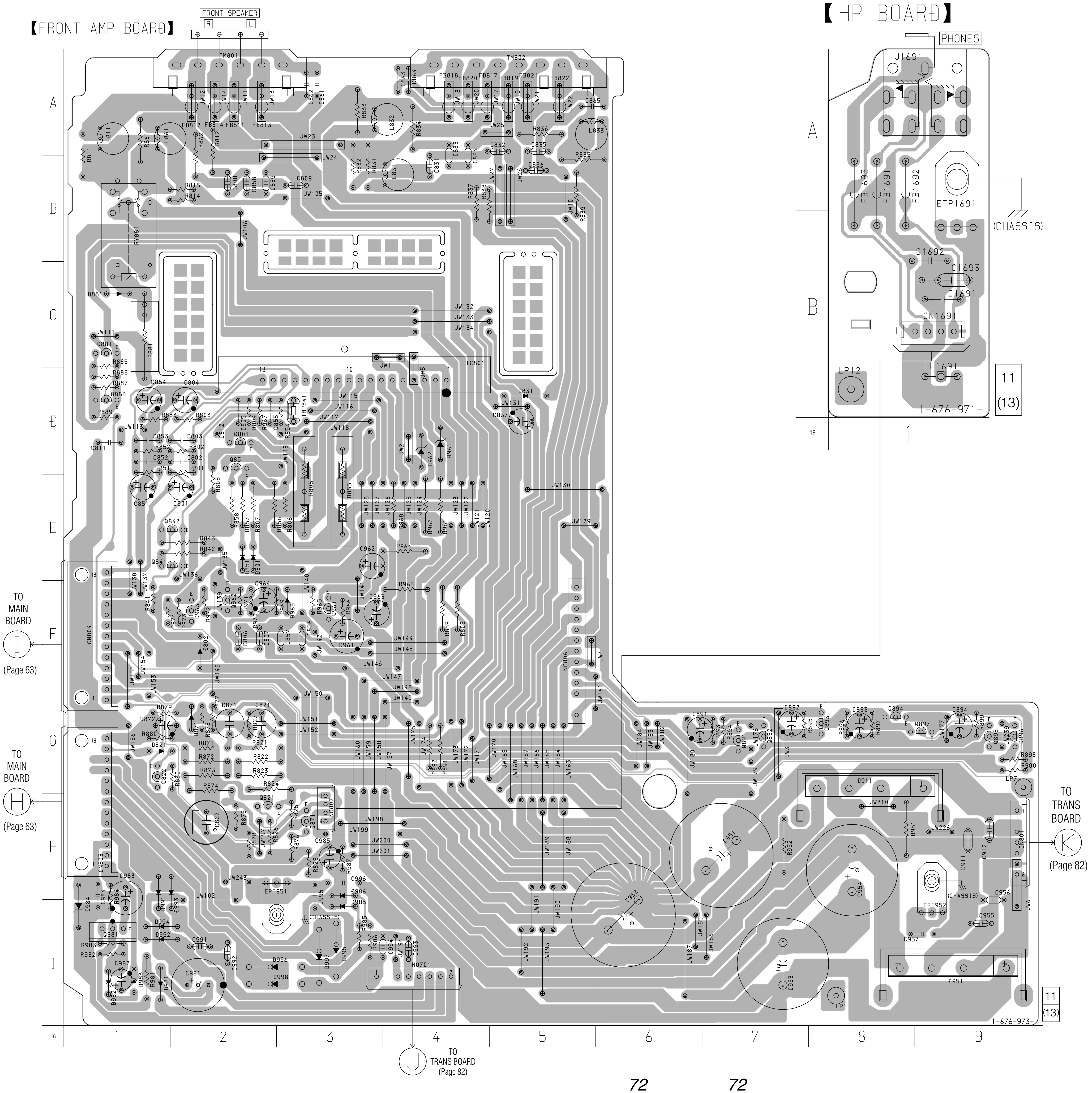
NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark:MD PLAY

7-19. PRINTED WIRING BOARD – AMP SECTION –

• See page 48 for Circuit Boards Location.

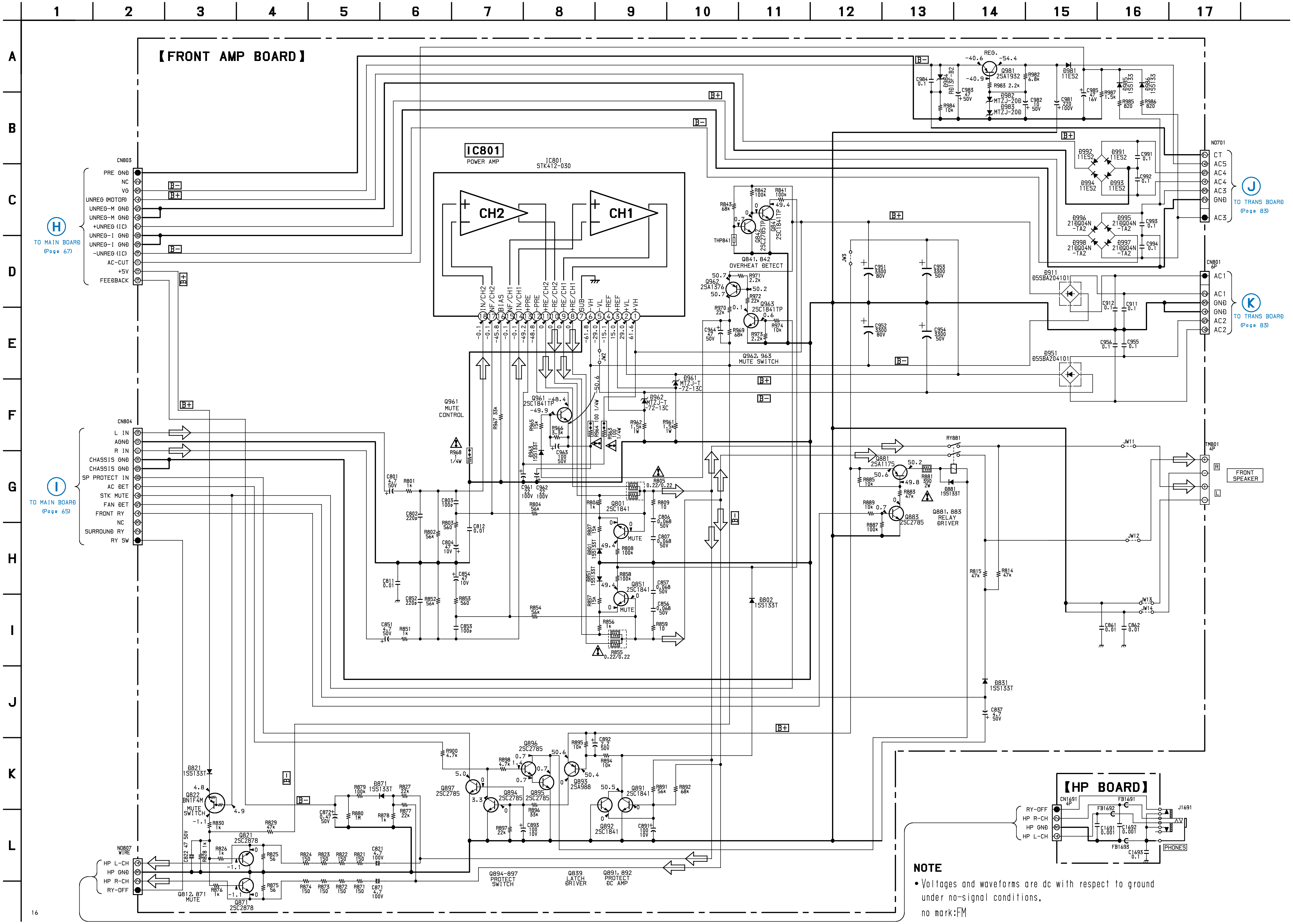
There are a few cases that the part printed on this diagram isn't mounted in this model.


【FRONT AMP BOARD】
FRONT SPEAKER
R
L
【HP BOARD】
PHONES
J1691
ETP1691
(CHASSIS)
CN1691
FL1691
LP12
1-676-971-
11
(13)
TO MAIN BOARD
I
(Page 63)
TO MAIN BOARD
H
(Page 63)
TO TRANS BOARD
K
(Page 82)
TO TRANS BOARD
J
(Page 82)
IC801
CN804
CN803
CN801
TM801
TM802
1-676-973-
11
(13)
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9

• Semiconductor Location

Ref. No.	Location
D801	E-2
D802	F-2
D821	G-1
D831	D-5
D851	E-2
D871	G-2
D881	C-1
D911	G-8
D951	I-9
D961	D-4
D962	D-4
D963	F-3
D981	I-1
D982	I-1
D983	I-1
D984	I-1
D985	I-3
D986	H-3
D991	H-1
D992	I-1
D993	H-1
D994	I-1
D995	I-3
D996	I-2
D997	I-3
D998	I-2
IC801	D-4
Q801	D-2
Q821	H-2
Q822	G-1
Q841	E-1
Q842	E-1
Q851	D-2
Q871	H-3
Q881	C-1
Q883	D-1
Q891	G-7
Q892	G-7
Q893	G-8
Q894	G-8
Q895	G-9
Q896	G-9
Q897	G-9
Q961	F-3
Q962	F-2
Q963	F-2
Q981	I-1

7-20. SCHEMATIC DIAGRAM – AMP SECTION –


【FRONT AMP BOARD】
IC801
POWER AMP
IC801
STK412-030
CH2
CH1
CN803
PRE GND
NC
VG
UNREG (MOTOR)
UNREG-M GND
UNREG-M GND
+UNREG (IC)
UNREG-I GND
UNREG-I GND
-UNREG (IC)
AC-CUT
+5V
FEEDBACK
H
TO MAIN BOARD
(Page 67)
CN804
L IN
AGND
R IN
CHASSIS GND
CHASSIS GND
SP PROTECT IN
AC DET
STK MUTE
FAN DET
FRONT RY
NC
SURROUND RY
RY SW
I
TO MAIN BOARD
(Page 65)
N0701
CT
AC5
AC4
AC4
AC3
GND
AC3
J
TO TRANS BOARD
(Page 83)
CN801
6P
AC1
AC1
GND
GND
AC2
AC2
K
TO TRANS BOARD
(Page 83)
TM801
4P
FRONT SPEAKER
REG.
Q981
2SA1932
D981
11ES2
Q841, 842
OVERHEAT DETECT
THP841
Q962, 963
MUTE SWITCH
Q961
MUTE CONTROL
Q801
2SC1841
Q851
2SC1841
MUTE
D911
D5SBA20410
D951
D5SBA20410
RY881
Q881
2SA1175
Q883
2SC2785
Q881, 883
RELAY DRIVER
Q822
BN1F4M
MUTE SWITCH
Q821
2SC2878
Q871
2SC2878
Q812, 871
MUTE
N0807
WIRE
HP L-CH
HP GND
HP R-CH
RY-OFF
Q894-897
PROTECT SWITCH
Q839
LATCH DRIVER
Q891, 892
PROTECT DC AMP
【HP BOARD】
CN1691
4P
RY-OFF
HP R-CH
HP GND
HP L-CH
J1691
PHONES
16

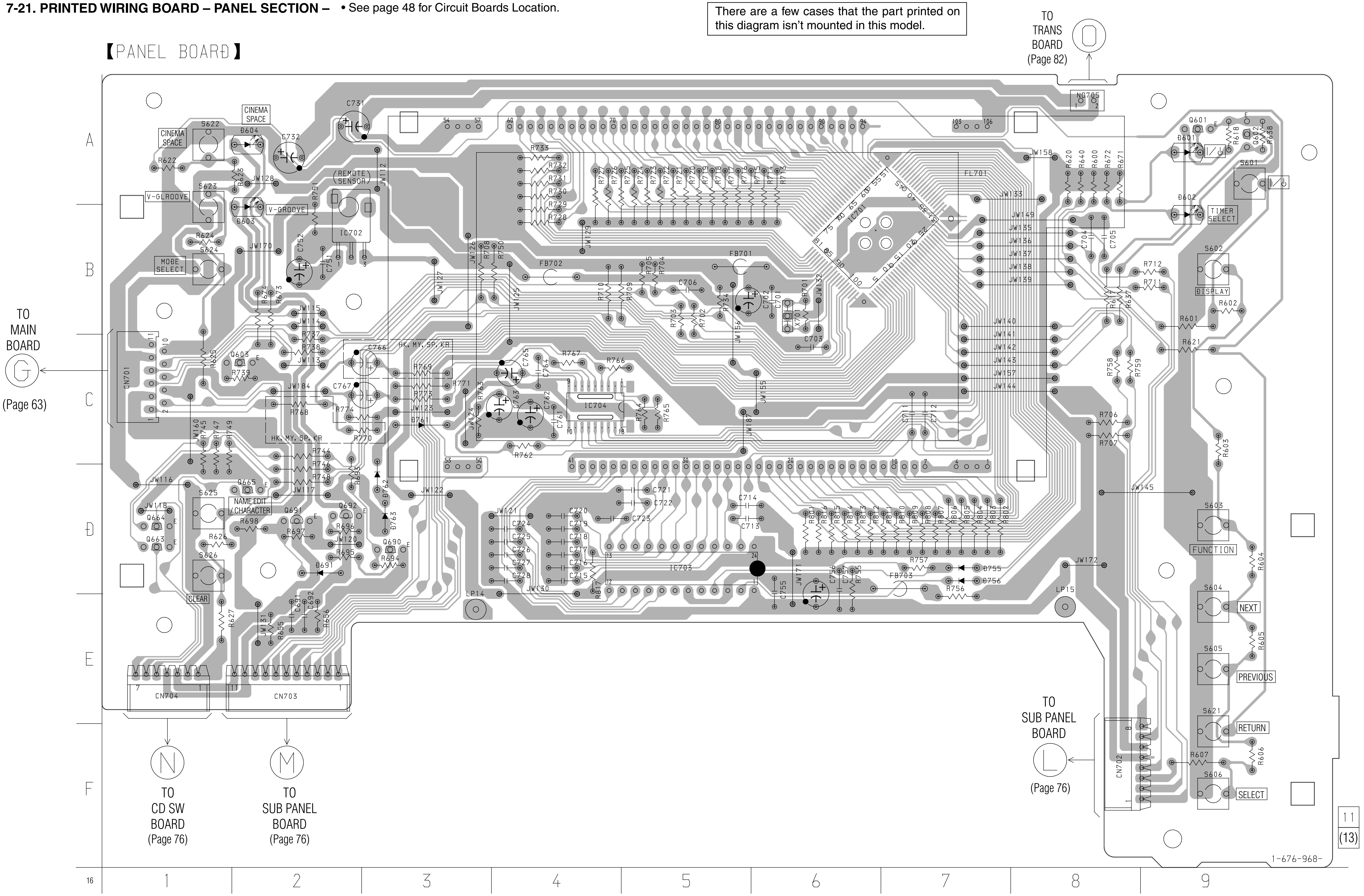
NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark:FM

7-21. PRINTED WIRING BOARD – PANEL SECTION –

• See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.

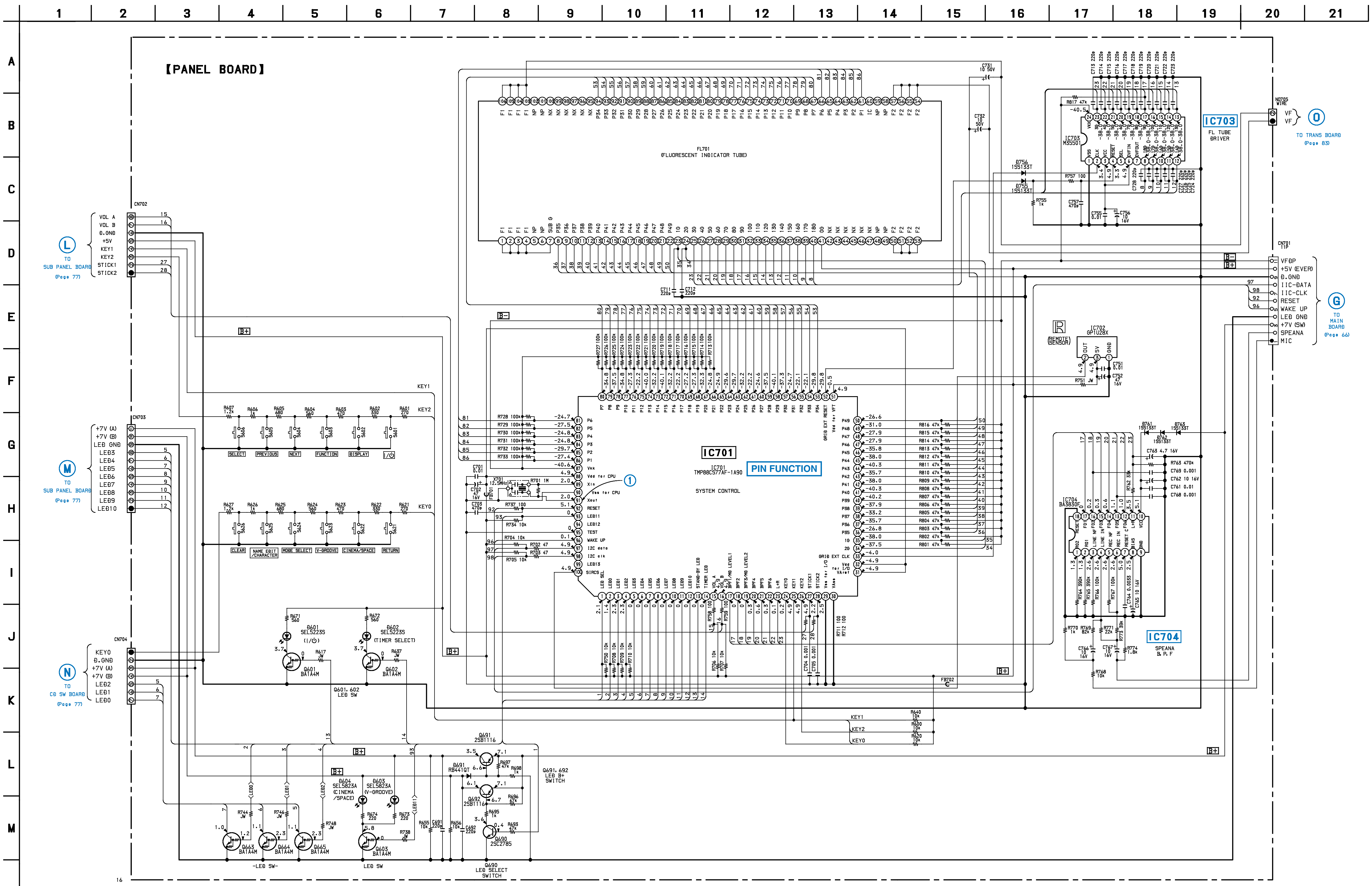

【PANEL BOARD】
TO TRANS BOARD (Page 82)
O
TO MAIN BOARD
G
(Page 63)
TO CD SW BOARD (Page 76)
N
TO SUB PANEL BOARD (Page 76)
M
TO SUB PANEL BOARD
L
(Page 76)
CINEMA SPACE
V-GROOVE
MODE SELECT
REMOTE SENSOR
HK. MY. SP. KR
NAME EDIT /CHARACTER
CLEAR
TIMER SELECT
DISPLAY
FUNCTION
NEXT
PREVIOUS
RETURN
SELECT
IC701
IC702
IC703
IC704
FL701
CN701
CN702
CN703
CN704
LP14
LP15
1-676-968-
11
(13)
A
B
C
D
E
F
1
2
3
4
5
6
7
8
9
16

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D601	A-9	D755	D-7	IC701	B-6	Q601	A-9	Q665	D-2
D602	B-9	D756	D-7	IC702	B-2	Q602	A-9	Q690	D-3
D603	B-2	D761	C-3	IC703	D-5	Q603	C-2	Q691	D-2
D604	A-2	D762	D-3	IC704	C-4	Q663	D-1	Q692	D-2
D691	D-2	D763	D-3			Q664	D-1		

7-22. SCHEMATIC DIAGRAM – PANEL SECTION –

- See page 50 for Waveforms.
- See page 93 for IC Block Diagrams.
- See page 104 for IC Pin Functions.


【PANEL BOARD】
FL701 (FLUORESCENT INDICATOR TUBE)
IC701 TMP88CS77AF-1A90 SYSTEM CONTROL
PIN FUNCTION
IC703 M35501 FL TUBE DRIVER
IC702 GP1U28X (REMOTE SENSOR)
IC704 BA3830F SPEANA B.P.F
CN702 VOL A, VOL B, D.GND, +5V, KEY1, KEY2, STICK1, STICK2
L TO SUB PANEL BOARD (Page 77)
CN703 +7V (A), +7V (B), LED GND, LED3, LED4, LED5, LED6, LED7, LED8, LED9, LED10
M TO SUB PANEL BOARD (Page 77)
CN704 KEY0, D.GND, +7V (A), +7V (B), LED2, LED1, LED0
N TO CD SW BOARD (Page 77)
CN701 VFDP, +5V (EVER), D.GND, IIC-DATA, IIC-CLK, RESET, WAKE UP, LED GND, +7V (SW), SPEANA, MIC
G TO MAIN BOARD (Page 66)
N0705 WIRE VF VF
O TO TRANS BOARD (Page 83)
SELECT, PREVIOUS, NEXT, FUNCTION, DISPLAY, I/⏻
CLEAR, NAME EDIT /CHARACTER, MODE SELECT, V-GROOVE, CINEMA/SPACE, RETURN
D601 SEL5223S (I/⏻)
D602 SEL5223S (TIMER SELECT)
Q601, 602 LED SW
D604 SEL5823A (CINEMA /SPACE)
D603 SEL5823A (V-GROOVE)
Q603 LED SW
Q663, Q664, Q665 BA1A4M -LED SW-
Q691 2SB1116
Q692 2SB1116
Q690 2SC2785
D691 RB441QT
Q691, 692 LED B+ SWITCH
Q690 LED SELECT SWITCH
X701 12.5MHz
B+ B–
①

NOTE
- Voltages and waveforms are dc with respect to ground under no-signal conditions.

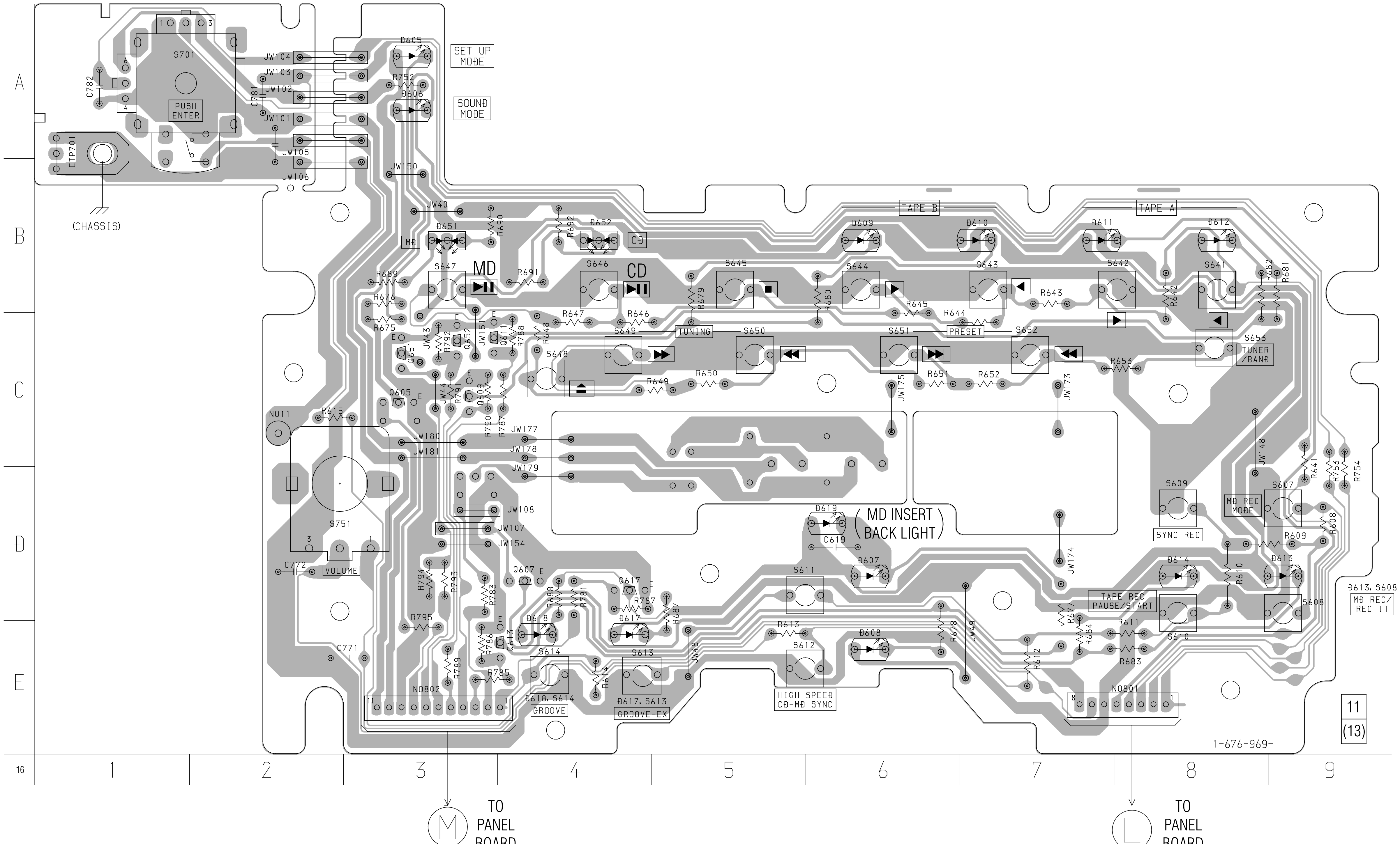
no mark: FM

7-23. PRINTED WIRING BOARD – SWITCH SECTION –

• See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.

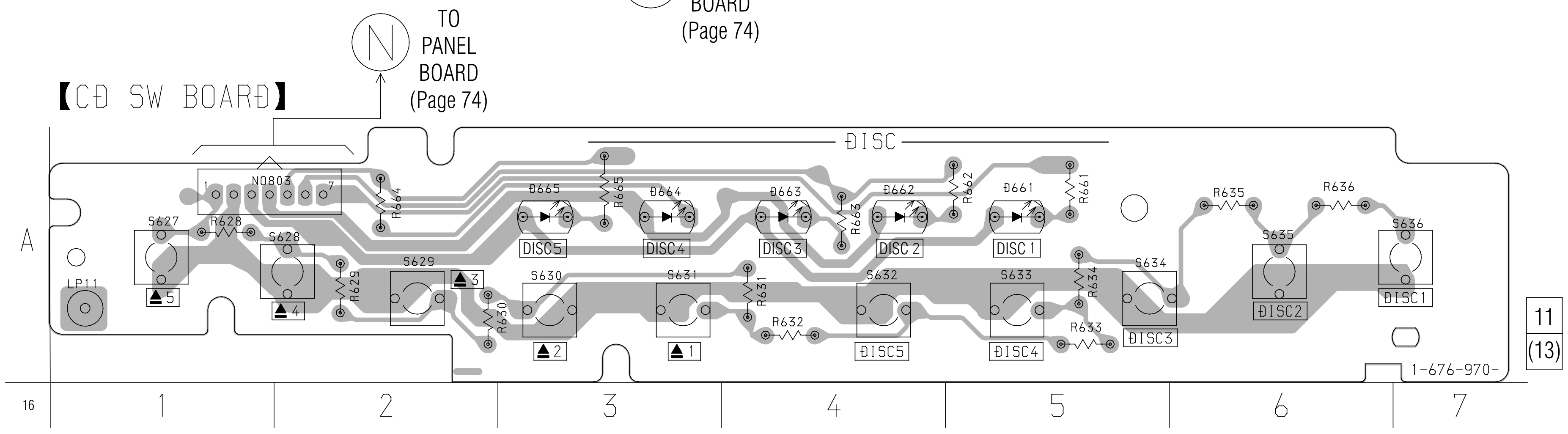
【SUB PANEL BOARD】


SET UP MODE
SOUND MODE
PUSH ENTER
S701
ETP701
(CHASSIS)
MD
CD
TAPE B
TAPE A
TUNING
PRESET
TUNER /BAND
MD INSERT BACK LIGHT
SYNC REC
MD REC MODE
TAPE REC PAUSE/START
D613, S608 MD REC/ REC IT
VOLUME
S751
N011
HIGH SPEED CD-MD SYNC
D618, S614 GROOVE
D617, S613 GROOVE-EX
NO802
NO801
1-676-969-
11
(13)
A
B
C
D
E
1
2
3
4
5
6
7
8
9
16
M
TO PANEL BOARD (Page 74)
L
TO PANEL BOARD (Page 74)

• Semiconductor Location

Ref. No.	Location
D605	A-3
D606	A-3
D609	B-6
D610	B-7
D611	B-7
D612	B-8
D613	D-9
D614	D-8
D617	E-4
D618	E-4
D619	D-6
D651	B-3
D652	B-4
Q605	C-3
Q607	D-4
Q609	C-3
Q611	C-3
Q613	E-4
Q617	D-4
Q651	C-3
Q652	C-3

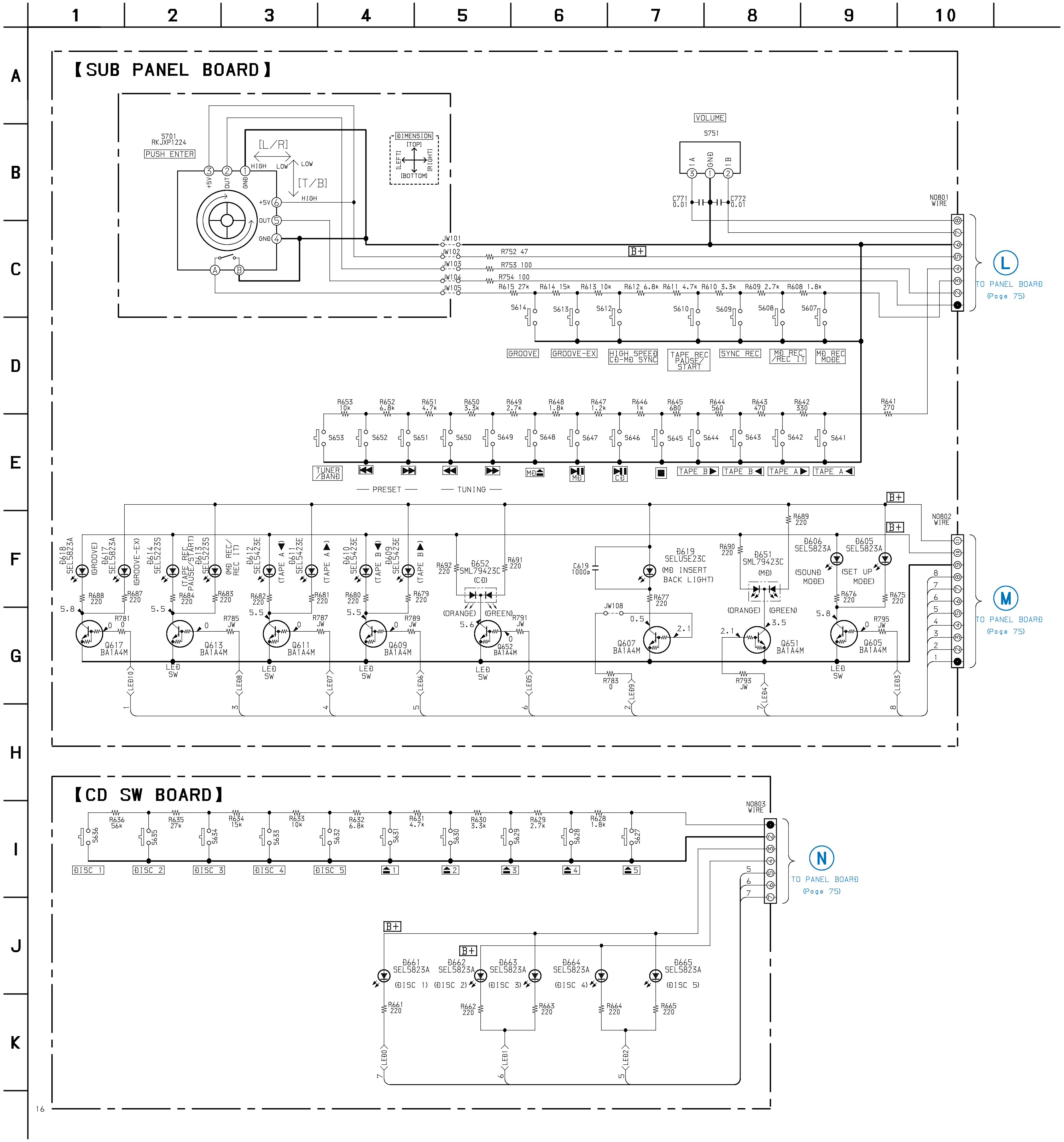
【CD SW BOARD】


N
TO PANEL BOARD (Page 74)
DISC
NO803
LP11
S627
S628
S629
S630
S631
S632
S633
S634
S635
S636
D665
D664
D663
D662
D661
DISC5
DISC4
DISC3
DISC 2
DISC 1
▲5
▲4
▲3
▲2
▲1
DISC5
DISC4
DISC3
DISC2
DISC1
1-676-970-
11
(13)
A
1
2
3
4
5
6
7
16

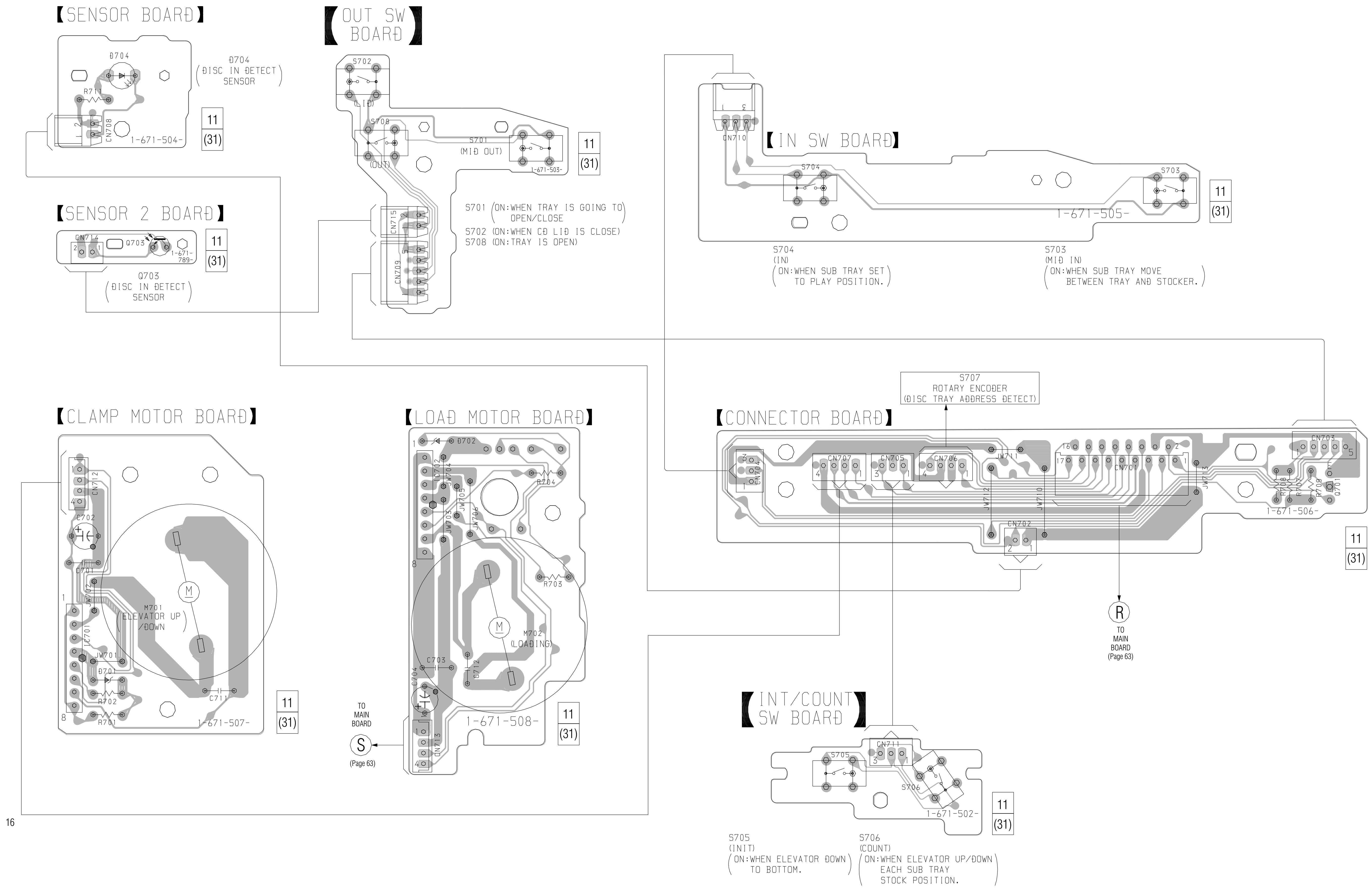
• Semiconductor Location

Ref. No.	Location
D661	A-5
D662	A-4
D663	A-4
D664	A-3
D665	A-3

7-24. SCHEMATIC DIAGRAM – SWITCH SECTION –

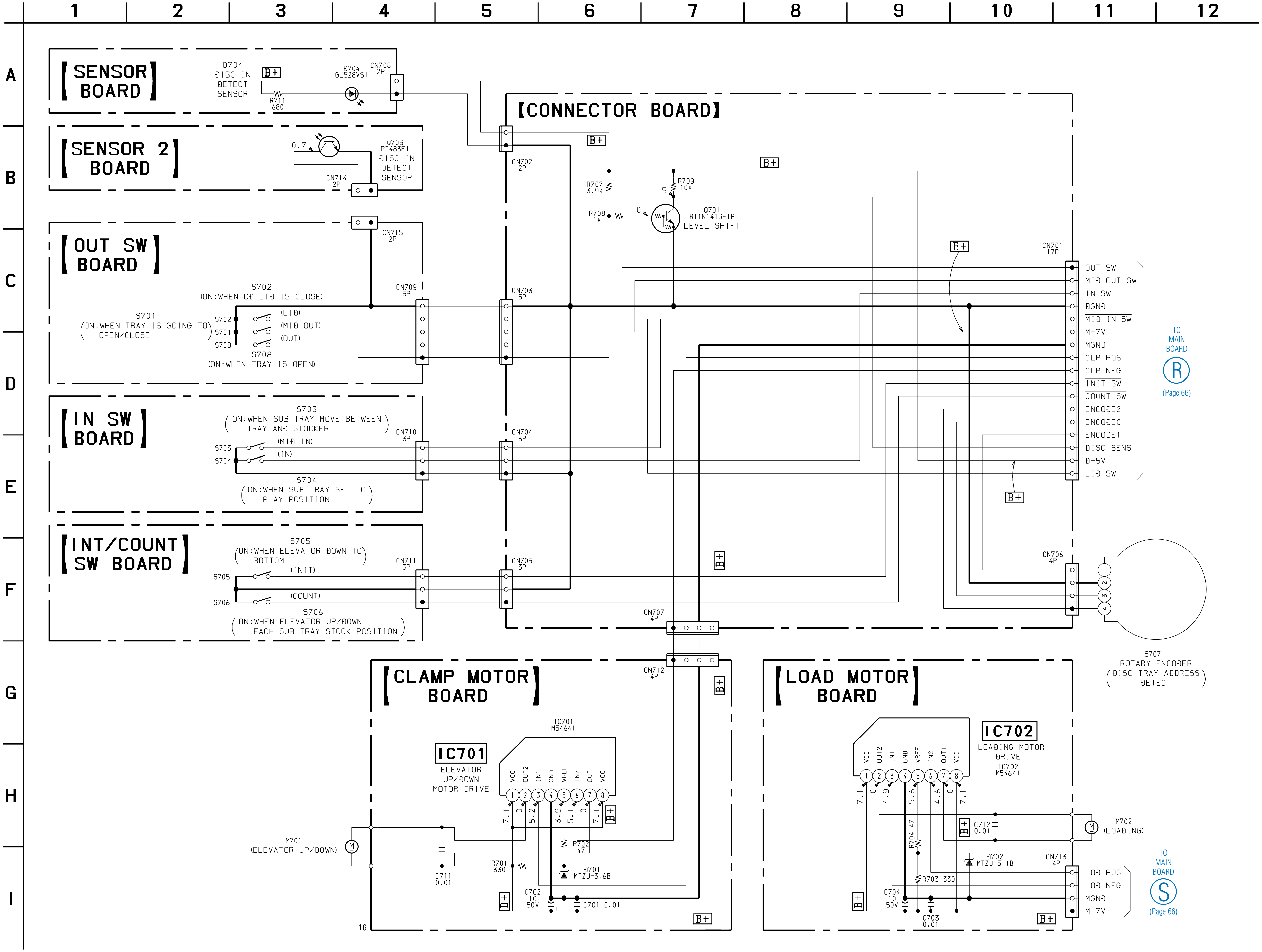

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
【SUB PANEL BOARD】
S701
RKJXP1224
PUSH ENTER
[L/R]
[T/B]
HIGH
LOW
+5V
OUT
GND
DIMENSION
[TOP]
[LEFT]
[RIGHT]
[BOTTOM]
VOLUME
S751
C771 0.01
C772 0.01
N0801 WIRE
JW101
JW102
JW103
JW104
JW105
R752 47
R753 100
R754 100
B+
R615 27k
R614 15k
R613 10k
R612 6.8k
R611 4.7k
R610 3.3k
R609 2.7k
R608 1.8k
S614
S613
S612
S610
S609
S608
S607
GROOVE
GROOVE-EX
HIGH SPEED CD-MD SYNC
TAPE REC PAUSE/ START
SYNC REC
MD REC /REC IT
MD REC MODE
L
TO PANEL BOARD (Page 75)
R653 10k
R652 6.8k
R651 4.7k
R650 3.3k
R649 2.7k
R648 1.8k
R647 1.2k
R646 1k
R645 680
R644 560
R643 470
R642 330
R641 270
S653
S652
S651
S650
S649
S648
S647
S646
S645
S644
S643
S642
S641
TUNER /BAND
MD
CD
TAPE B
TAPE A
PRESET
TUNING
N0802 WIRE
D618 SEL5823A (GROOVE)
D617 SEL5823A (GROOVE-EX)
D614 SEL5223S (TAPE REC PAUSE/START)
D613 SEL5223S (MD REC/ REC IT)
D612 SEL5423E (TAPE A)
D611 SEL5423E (TAPE A)
D610 SEL5423E (TAPE B)
D609 SEL5423E (TAPE B)
D652 SML79423C (CD)
(ORANGE)
(GREEN)
R692 220
R691 220
C619 1000p
D619 SELU5E23C (MD INSERT BACK LIGHT)
D651 SML79423C (MD)
R690 220
R689 220
D606 SEL5823A (SOUND MODE)
D605 SEL5823A (SET UP MODE)
R688 220
R687 220
R684 220
R683 220
R682 220
R681 220
R680 220
R679 220
R677 220
R676 220
R675 220
R781 0
R785 JW
R787 JW
R789 JW
R791 JW
R783 0
R793 JW
R795 JW
JW108
Q617 BA1A4M
Q613 BA1A4M
Q611 BA1A4M
Q609 BA1A4M
Q652 BA1A4M
Q607 BA1A4M
Q651 BA1A4M
Q605 BA1A4M
5.8
5.5
5.6
0.5
2.1
3.5
0
LED SW
LED10
LED8
LED7
LED6
LED5
LED9
LED4
LED3
M
TO PANEL BOARD (Page 75)
【CD SW BOARD】
N0803 WIRE
R636 56k
R635 27k
R634 15k
R633 10k
R632 6.8k
R631 4.7k
R630 3.3k
R629 2.7k
R628 1.8k
S636
S635
S634
S633
S632
S631
S630
S629
S628
S627
DISC 1
DISC 2
DISC 3
DISC 4
DISC 5
1
2
3
4
5
N
TO PANEL BOARD (Page 75)
D661 SEL5823A (DISC 1)
D662 SEL5823A (DISC 2)
D663 SEL5823A (DISC 3)
D664 SEL5823A (DISC 4)
D665 SEL5823A (DISC 5)
R661 220
R662 220
R663 220
R664 220
R665 220
LED0
LED1
LED2
16

7-25. PRINTED WIRING BOARD – CD MECHANISM SECTION – • See page 48 for Circuit Boards Location.



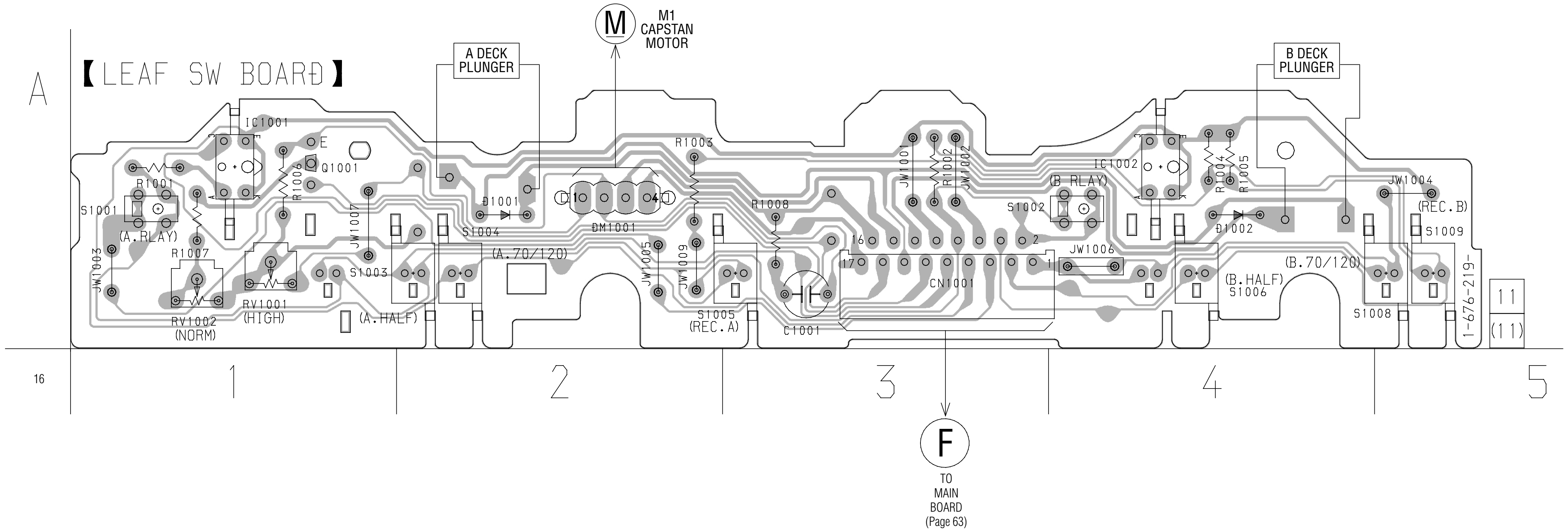
【SENSOR BOARD】
D704
D704 (DISC IN DETECT SENSOR)
R711
CN708
1-671-504-
11 (31)
【OUT SW BOARD】
S702
(LID)
S708
(OUT)
S701
(MID OUT)
1-671-503-
11 (31)
CN715
CN709
S701 (ON:WHEN TRAY IS GOING TO OPEN/CLOSE)
S702 (ON:WHEN CD LID IS CLOSE)
S708 (ON:TRAY IS OPEN)
【SENSOR 2 BOARD】
CN714
Q703
1-671-789-
11 (31)
Q703 (DISC IN DETECT SENSOR)
【IN SW BOARD】
CN710
S704
S703
1-671-505-
11 (31)
S704 (IN) (ON:WHEN SUB TRAY SET TO PLAY POSITION.)
S703 (MID IN) (ON:WHEN SUB TRAY MOVE BETWEEN TRAY AND STOCKER.)
S707 ROTARY ENCODER (DISC TRAY ADDRESS DETECT)
【CLAMP MOTOR BOARD】
CN712
C702
C701
JW702
M701 (ELEVATOR UP/DOWN)
CN701
JW701
D701
R702
R701
C711
1-671-507-
11 (31)
【LOAD MOTOR BOARD】
D702
CN702
JW704
JW705
JW706
JW703
R704
R703
M702 (LOADING)
C703
C704
C712
CN713
1-671-508-
11 (31)
TO MAIN BOARD
S
(Page 63)
【CONNECTOR BOARD】
CN704
CN707
CN705
CN706
JW711
CN701
JW712
JW710
JW713
CN702
CN703
R708
R707
R709
Q701
1-671-506-
11 (31)
R
TO MAIN BOARD (Page 63)
【INT/COUNT SW BOARD】
CN711
S705
S706
1-671-502-
11 (31)
S705 (INIT) (ON:WHEN ELEVATOR DOWN TO BOTTOM.)
S706 (COUNT) (ON:WHEN ELEVATOR UP/DOWN EACH SUB TRAY STOCK POSITION.)
16

7-26. SCHEMATIC DIAGRAM – CD MECHANISM SECTION –

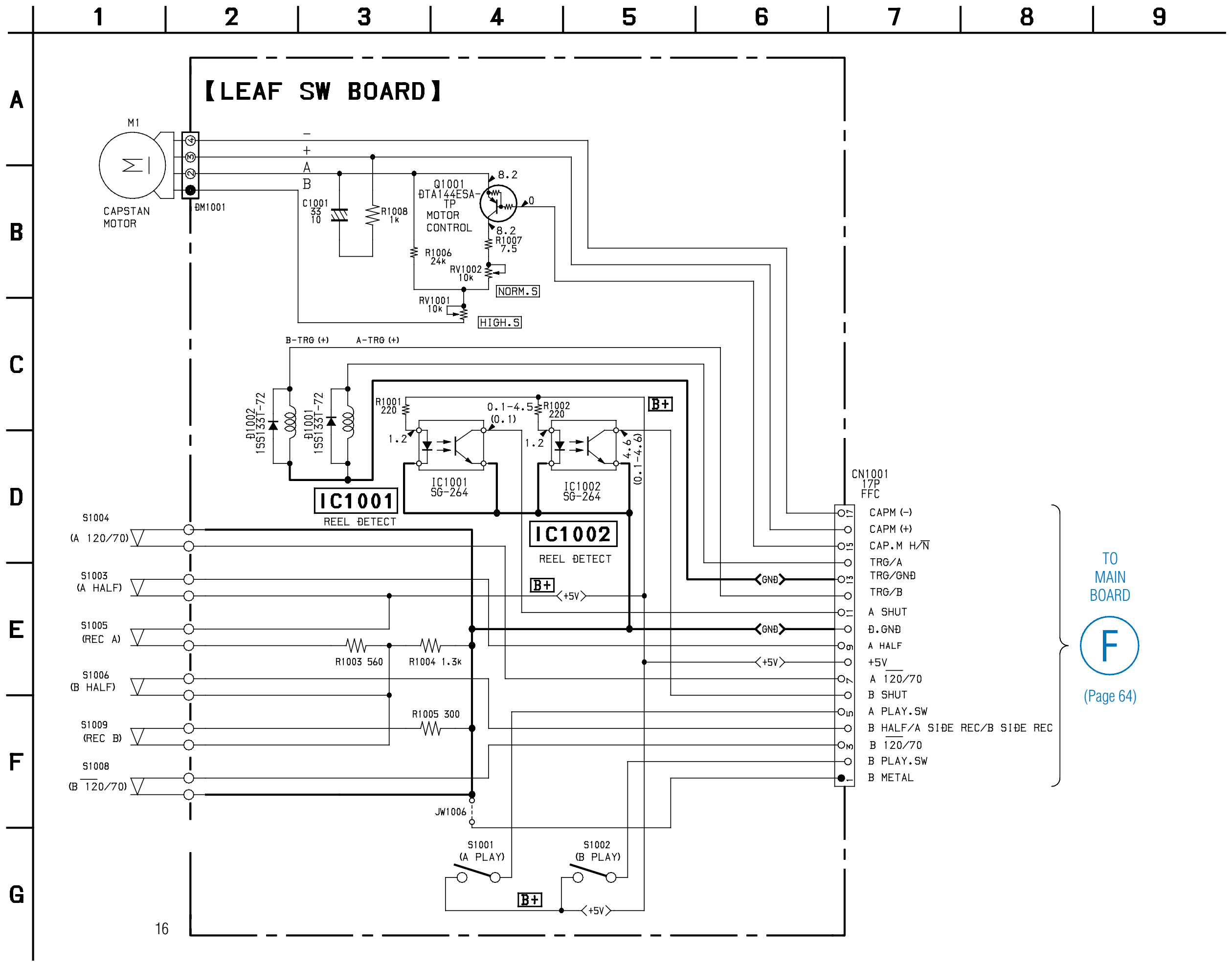

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
SENSOR BOARD
D704 DISC IN DETECT SENSOR
B+
R711 680
D704 GL528VS1
CN708 2P
SENSOR 2 BOARD
0.7
Q703 PT483F1 DISC IN DETECT SENSOR
CN714 2P
CN715 2P
OUT SW BOARD
S702 (ON:WHEN CD LID IS CLOSE)
S701 (ON:WHEN TRAY IS GOING TO OPEN/CLOSE)
S702
S701
S708
(LID)
(MID OUT)
(OUT)
S708 (ON:WHEN TRAY IS OPEN)
CN709 5P
IN SW BOARD
S703 (ON:WHEN SUB TRAY MOVE BETWEEN TRAY AND STOCKER
(MID IN)
(IN)
S703
S704
CN710 3P
S704 (ON:WHEN SUB TRAY SET TO PLAY POSITION)
INT/COUNT SW BOARD
S705 (ON:WHEN ELEVATOR DOWN TO BOTTOM)
(INIT)
(COUNT)
S705
S706
CN711 3P
S706 (ON:WHEN ELEVATOR UP/DOWN EACH SUB TRAY STOCK POSITION)
CONNECTOR BOARD
CN702 2P
CN703 5P
CN704 3P
CN705 3P
CN707 4P
R707 3.9k
R708 1k
R709 10k
5
0
Q701 RT1N141S-TP LEVEL SHIFT
CN701 17P
OUT SW
MID OUT SW
IN SW
DGND
MID IN SW
M+7V
MGND
CLP POS
CLP NEG
INIT SW
COUNT SW
ENCODE2
ENCODE0
ENCODE1
DISC SENS
D+5V
LID SW
TO MAIN BOARD
R
(Page 66)
CN706 4P
1
2
3
4
S707 ROTARY ENCODER (DISC TRAY ADDRESS DETECT)
CN712 4P
CLAMP MOTOR BOARD
IC701
ELEVATOR UP/DOWN MOTOR DRIVE
IC701 M54641
VCC
OUT2
IN1
GND
VREF
IN2
OUT1
VCC
7.1
0
5.2
3.9
5.1
0
7.1
M701 (ELEVATOR UP/DOWN)
C711 0.01
R701 330
R702 47
D701 MTZJ-3.6B
C702 10 50V
C701 0.01
16
LOAD MOTOR BOARD
IC702
LOADING MOTOR DRIVE
IC702 M54641
7.1
0
4.9
5.6
4.6
0
7.1
C712 0.01
M702 (LOADING)
R704 47
D702 MTZJ-5.1B
R703 330
CN713 4P
C704 10 50V
C703 0.01
LOD POS
LOD NEG
MGND
M+7V
TO MAIN BOARD
S
(Page 66)

7-27. PRINTED WIRING BOARD – LEAF SW SECTION –

• See page 48 for Circuit Boards Location.


【LEAF SW BOARD】
M
M1
CAPSTAN
MOTOR
A DECK
PLUNGER
B DECK
PLUNGER
IC1001
Q1001
E
R1001
R1006
S1001
(A.PLAY)
JW1003
R1007
RV1002
(NORM)
RV1001
(HIGH)
JW1007
S1003
(A.HALF)
D1001
S1004
(A.70/120)
DM1001
R1003
R1008
JW1005
JW1009
S1005
(REC.A)
C1001
CN1001
16
17
2
1
JW1001
R1002
JW1002
S1002
(B.PLAY)
IC1002
R1004
R1005
D1002
JW1006
JW1004
(REC.B)
S1009
(B.HALF)
S1006
(B.70/120)
S1008
1-676-219-
11
(11)
A
16
1
2
3
4
5
F
TO
MAIN
BOARD
(Page 63)

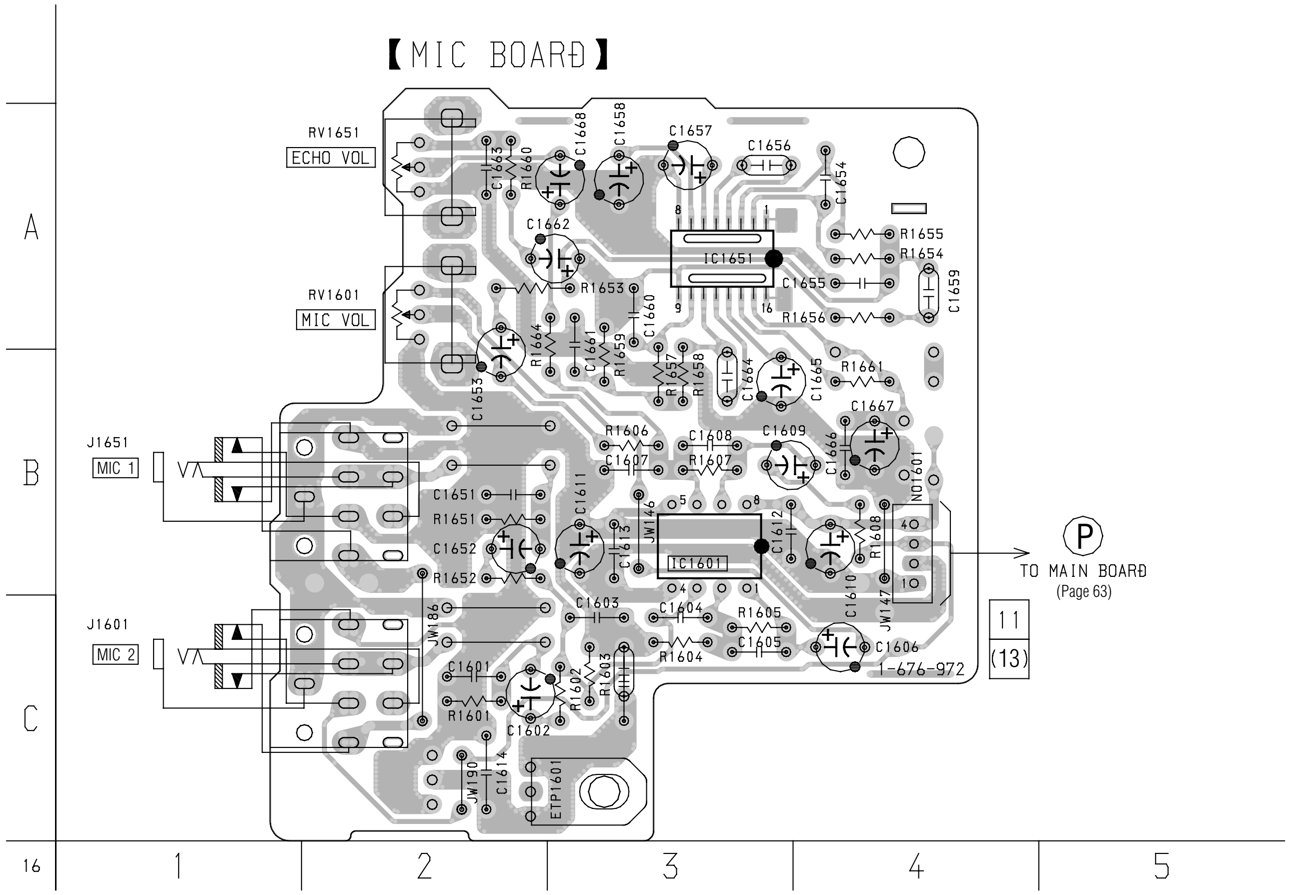
7-28. SCHEMATIC DIAGRAM – LEAF SW SECTION –


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
【LEAF SW BOARD】
M1
CAPSTAN
MOTOR
DM1001
–
+
A
B
C1001
33
10
R1008
1k
Q1001
DTA144ESA-
TP
MOTOR
CONTROL
8.2
0
8.2
R1007
7.5
R1006
24k
RV1002
10k
NORM.S
RV1001
10k
HIGH.S
B-TRG (+)
A-TRG (+)
D1002
1SS133T-72
D1001
1SS133T-72
R1001
220
0.1-4.5
(0.1)
R1002
220
B+
1.2
1.2
4.6
(0.1-4.6)
IC1001
SG-264
IC1002
SG-264
IC1001
REEL DETECT
IC1002
REEL DETECT
S1004
(A 120/70)
S1003
(A HALF)
S1005
(REC A)
S1006
(B HALF)
S1009
(REC B)
S1008
(B 120/70)
R1003 560
R1004 1.3k
R1005 300
B+
+5V
GND
GND
+5V
JW1006
S1001
(A PLAY)
S1002
(B PLAY)
B+
+5V
16
CN1001
17P
FFC
17 CAPM (–)
CAPM (+)
15 CAP.M H/N
TRG/A
13 TRG/GND
TRG/B
11 A SHUT
D.GND
9 A HALF
+5V
7 A 120/70
B SHUT
5 A PLAY.SW
B HALF/A SIDE REC/B SIDE REC
3 B 120/70
B PLAY.SW
1 B METAL
TO
MAIN
BOARD
F
(Page 64)

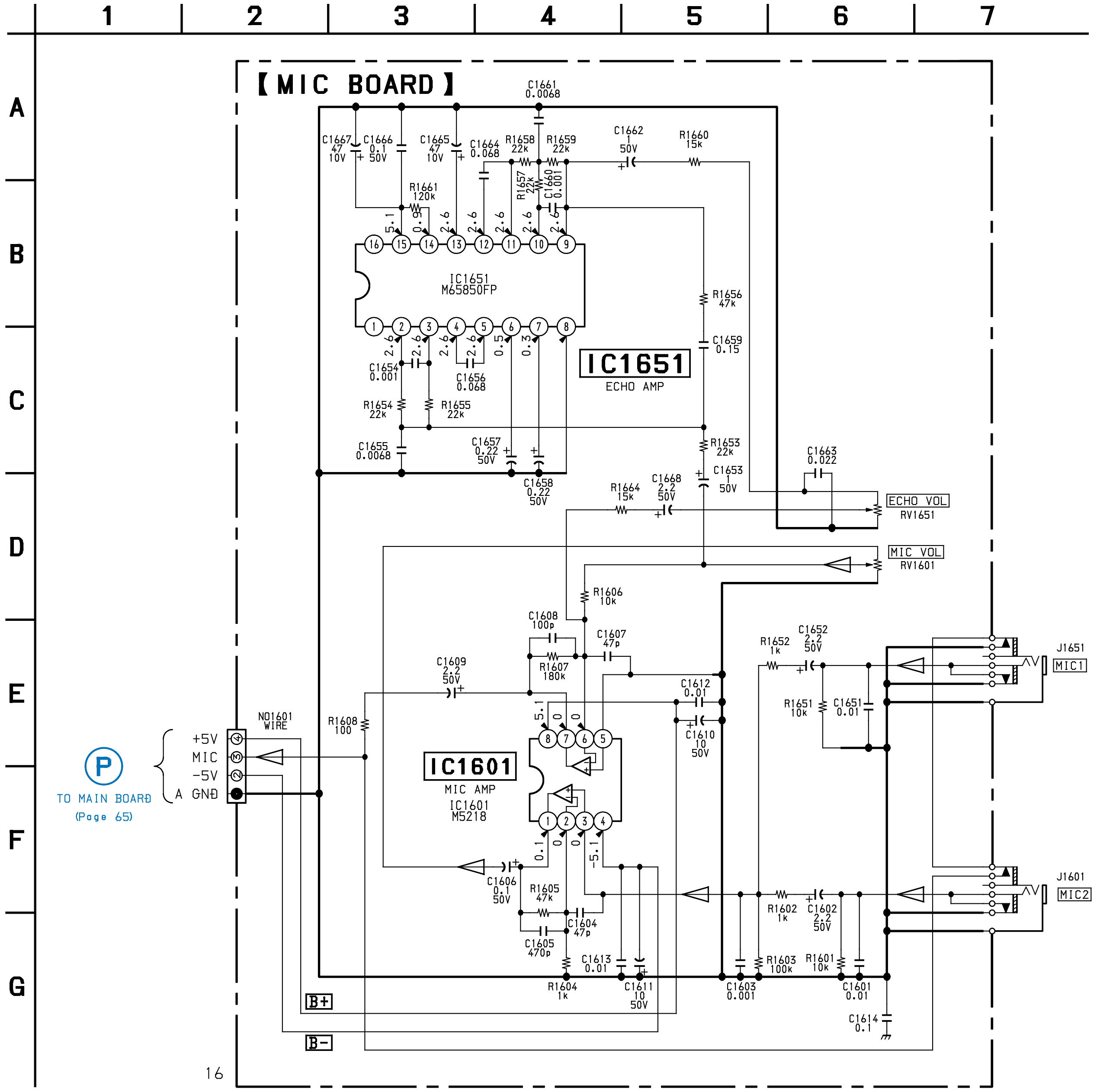
7-29. PRINTED WIRING BOARD – MIC SECTION –

• See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.


【MIC BOARD】
RV1651 ECHO VOL
RV1601 MIC VOL
J1651 MIC 1
J1601 MIC 2
IC1651
IC1601
P TO MAIN BOARD (Page 63)
11 (13)
1-676-972
16
A B C
1 2 3 4 5

7-30. SCHEMATIC DIAGRAM – MIC SECTION –

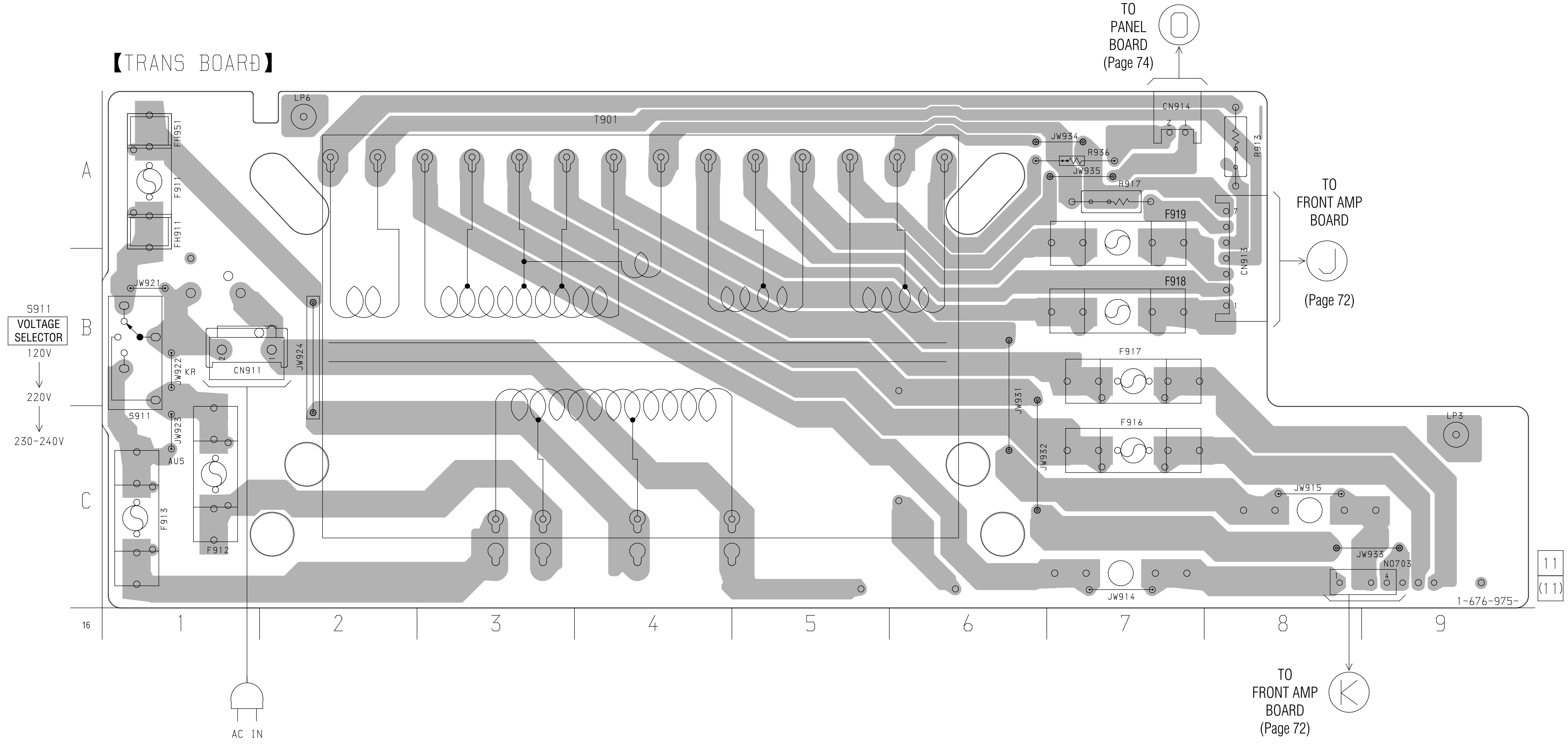

【MIC BOARD】
IC1651 M65850FP
IC1651 ECHO AMP
IC1601 MIC AMP
IC1601 M5218
ECHO VOL RV1651
MIC VOL RV1601
J1651 MIC1
J1601 MIC2
ND1601 WIRE
+5V
MIC
-5V
GND
P TO MAIN BOARD (Page 65)
B+
B-
16
1 2 3 4 5 6 7
A B C D E F G

Voltages are dc with respect to ground under no-signal (detuned) conditions.
no mark:FM

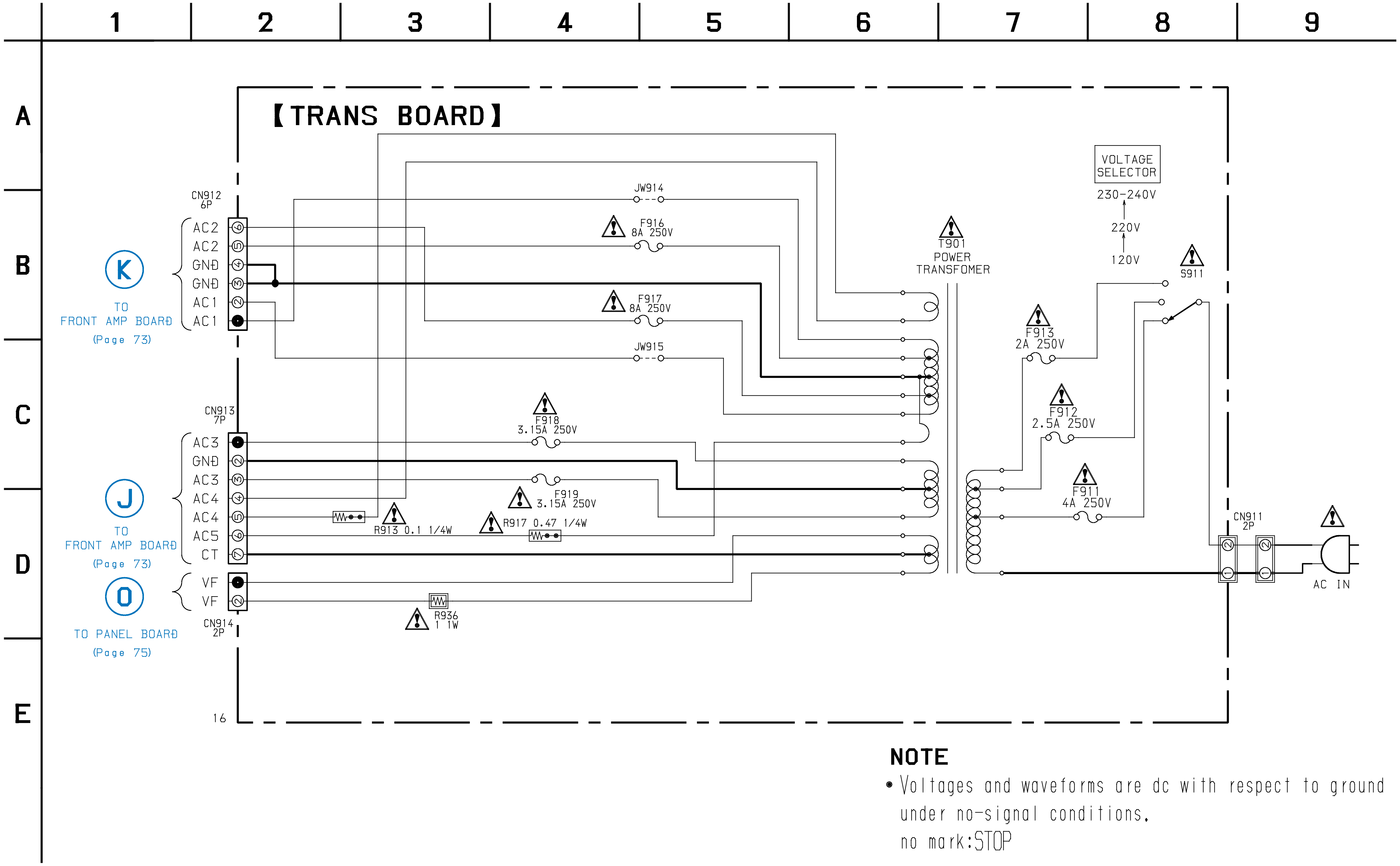
7-31. PRINTED WIRING BOARD – POWER SUPPLY SECTION –

• See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.


【TRANS BOARD】
TO PANEL BOARD (Page 74)
O
TO FRONT AMP BOARD
J
(Page 72)
TO FRONT AMP BOARD (Page 72)
K
S911
VOLTAGE SELECTOR
120V
220V
230-240V
AC IN
LP6
T901
CN914
R913
JW934
R936
JW935
R917
F919
F918
CN913
F917
F916
JW931
JW932
JW915
JW933
N0703
JW914
LP3
FH951
F911
FH911
JW921
JW922
KR
CN911
JW924
S911
JW923
AUS
F913
F912
1-676-975-
11
(11)
A
B
C
1
2
3
4
5
6
7
8
9
16

7-32. SCHEMATIC DIAGRAM – POWER SUPPLY SECTION –

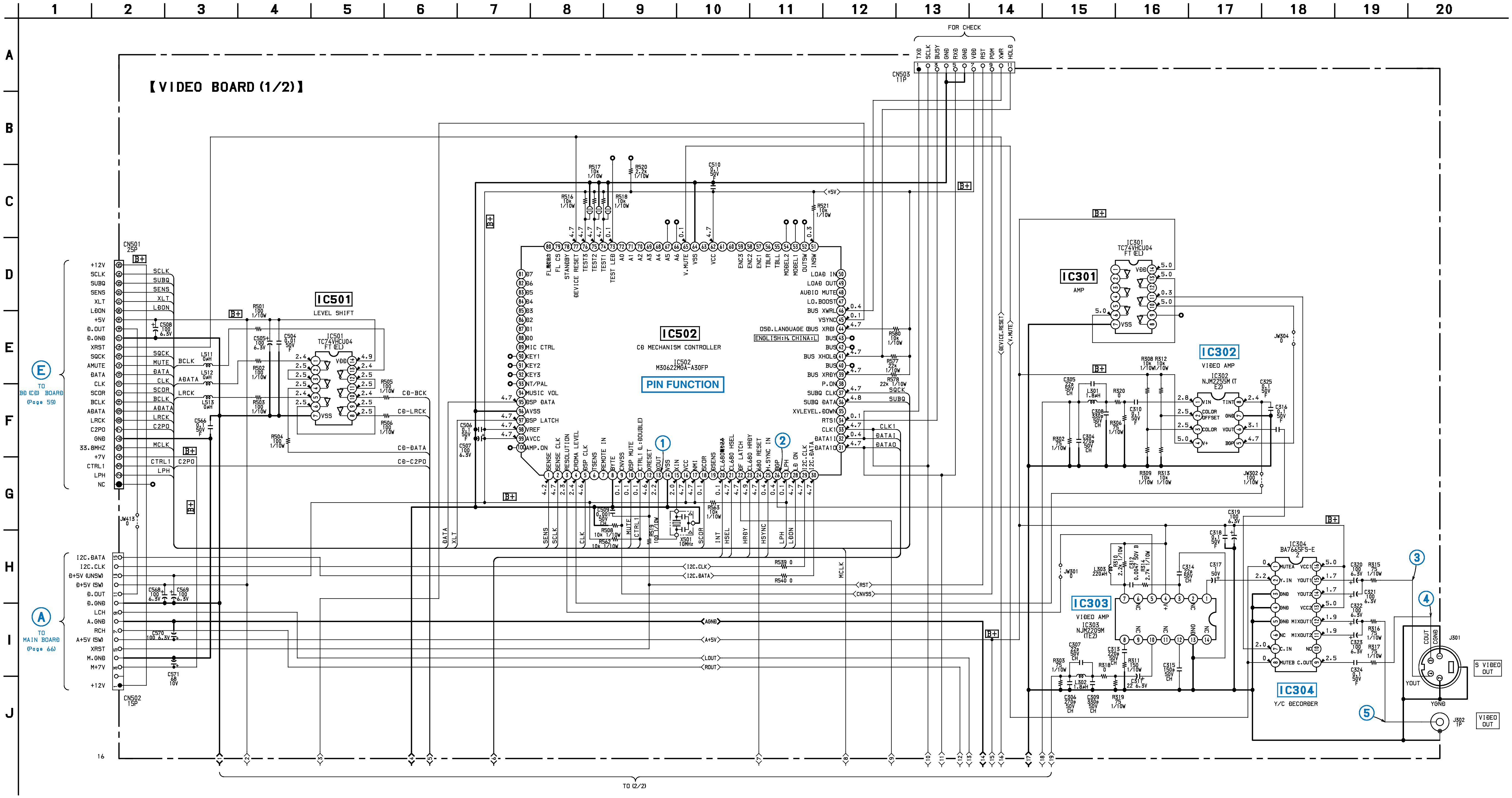

1
2
3
4
5
6
7
8
9
A
B
C
D
E
【TRANS BOARD】
CN912
6P
AC2
AC2
GND
GND
AC1
AC1
K
TO
FRONT AMP BOARD
(Page 73)
JW914
F916
8A 250V
F917
8A 250V
JW915
CN913
7P
AC3
GND
AC3
AC4
AC4
AC5
CT
J
TO
FRONT AMP BOARD
(Page 73)
F918
3.15A 250V
F919
3.15A 250V
R913 0.1 1/4W
R917 0.47 1/4W
VF
VF
O
TO PANEL BOARD
(Page 75)
CN914
2P
R936
1 1W
16
T901
POWER
TRANSFOMER
VOLTAGE
SELECTOR
230-240V
220V
120V
S911
F913
2A 250V
F912
2.5A 250V
F911
4A 250V
CN911
2P
AC IN

NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark:STOP

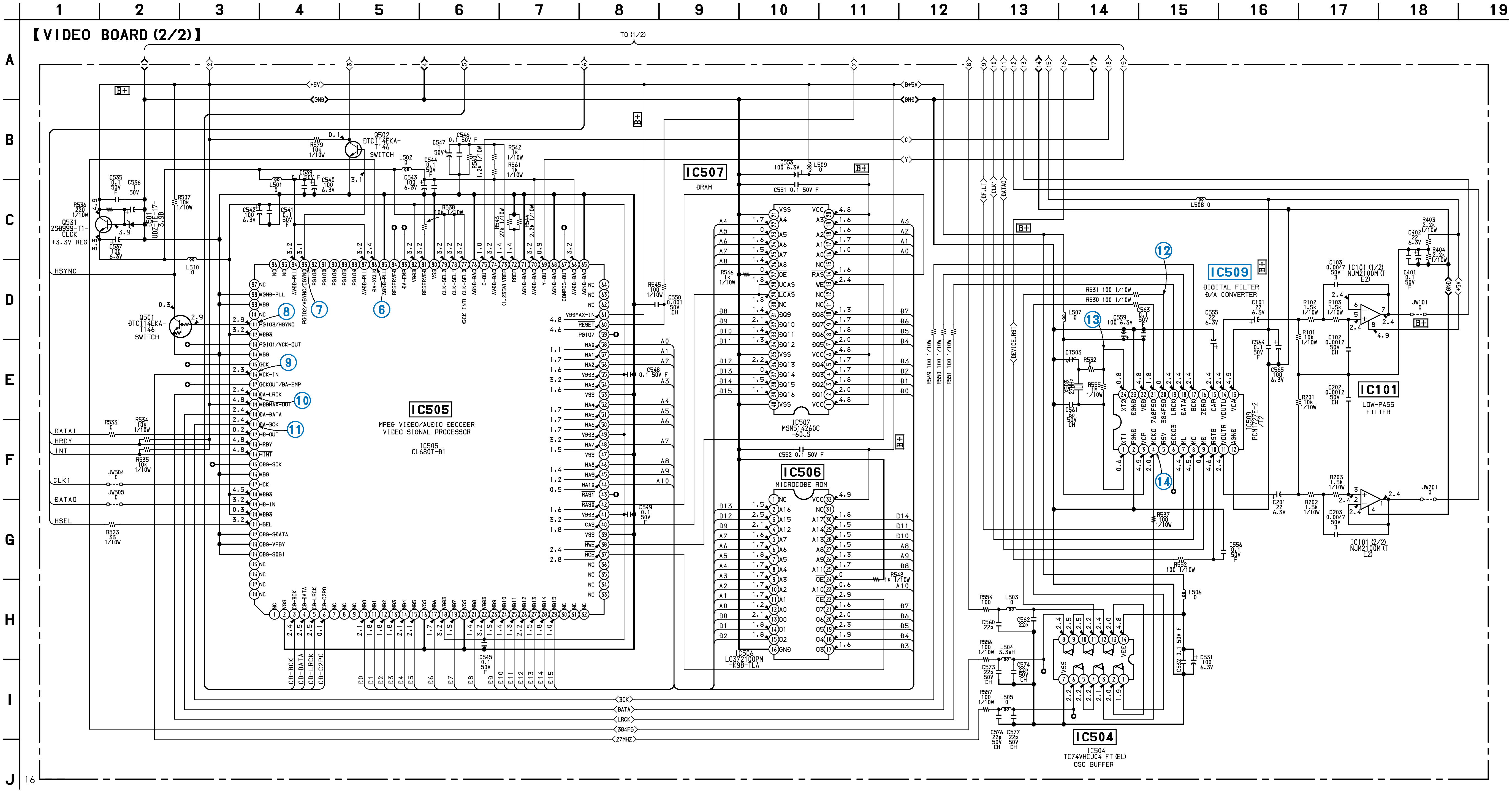
7-33. SCHEMATIC DIAGRAM – VIDEO CD SECTION (1/2) –

• See page 91 for IC Block Diagrams. • See page 94 for IC Pin Function Description.


【VIDEO BOARD (1/2)】
FOR CHECK
CN503 11P
TXD SCLK BUSY GND RXD GND VDD RST PGM XWR HOLD
CN501 25P
+12V SCLK SUBQ SENS XLT LDON +5V D.OUT D.GND XRST SQCK AMUTE DATA CLK SCOR BCLK ADATA LRCK C2PO GND 33.8MHZ +7V CTRL1 LPH NC
E TO BD (CD) BOARD (Page 59)
CN502 15P
I2C.DATA I2C.CLK D+5V (UNSW) D+5V (SW) D.OUT D.GND LCH A.GND RCH A+5V (SW) XRST M.GND M+7V +12V
A TO MAIN BOARD (Page 66)
IC501 LEVEL SHIFT
IC501 TC74VHCU04 FT (EL)
IC502 CD MECHANISM CONTROLLER
IC502 M30622M0A-A30FP
PIN FUNCTION
OSD.LANGUAGE (BUS XRDY)
ENGLISH:H, CHINA:L
CD-BCK CD-LRCK CD-DATA CD-C2PO
IC301 AMP
IC301 TC74VHCU04 FT (EL)
IC302 VIDEO AMP
IC302 NJM2255M (T E2)
IC303 VIDEO AMP
IC303 NJM2209M (TE2)
IC304 Y/C DECORDER
IC304 BA7665FS-E
X501 10MHz
DEVICE.RESET V.MUTE
I2C.CLK I2C.DATA RST CNVSS AGND A+5V LOUT ROUT
J301 S VIDEO OUT
J302 1P VIDEO OUT
YOUT YGND COUT CGND
①
②
③
④
⑤
TO (2/2)

7-34. SCHEMATIC DIAGRAM – VIDEO CD SECTION (2/2) –

• See page 50 for Waveforms. • See page 91 for IC Block Diagrams.


【VIDEO BOARD (2/2)】
TO (1/2)
IC505
MPEG VIDEO/AUDIO DECODER
VIDEO SIGNAL PROCESSOR
IC505
CL680T-B1
IC507
DRAM
IC507
MSM514260C
-60JS
IC506
MICROCODE ROM
IC506
LC372100PM
-K98-TLA
IC509
DIGITAL FILTER
D/A CONVERTER
IC509
PCM1717E-2
/T2
IC101
LOW-PASS
FILTER
IC101 (1/2)
NJM2100M (T
E2)
IC101 (2/2)
NJM2100M (T
E2)
IC504
IC504
TC74VHCU04 FT (EL)
OSC BUFFER
Q501
DTC114EKA-
T146
SWITCH
Q502
DTC114EKA-
T146
SWITCH
Q531
2SD999-T1-
CLK
+3.3V REG
HSYNC
DATAI
HRDY
INT
CLK1
DATAO
HSEL
BCK
DATA
LRCK
384FS
27MHZ
+5V
GND
B+5V
C
Y
X503
27MHz

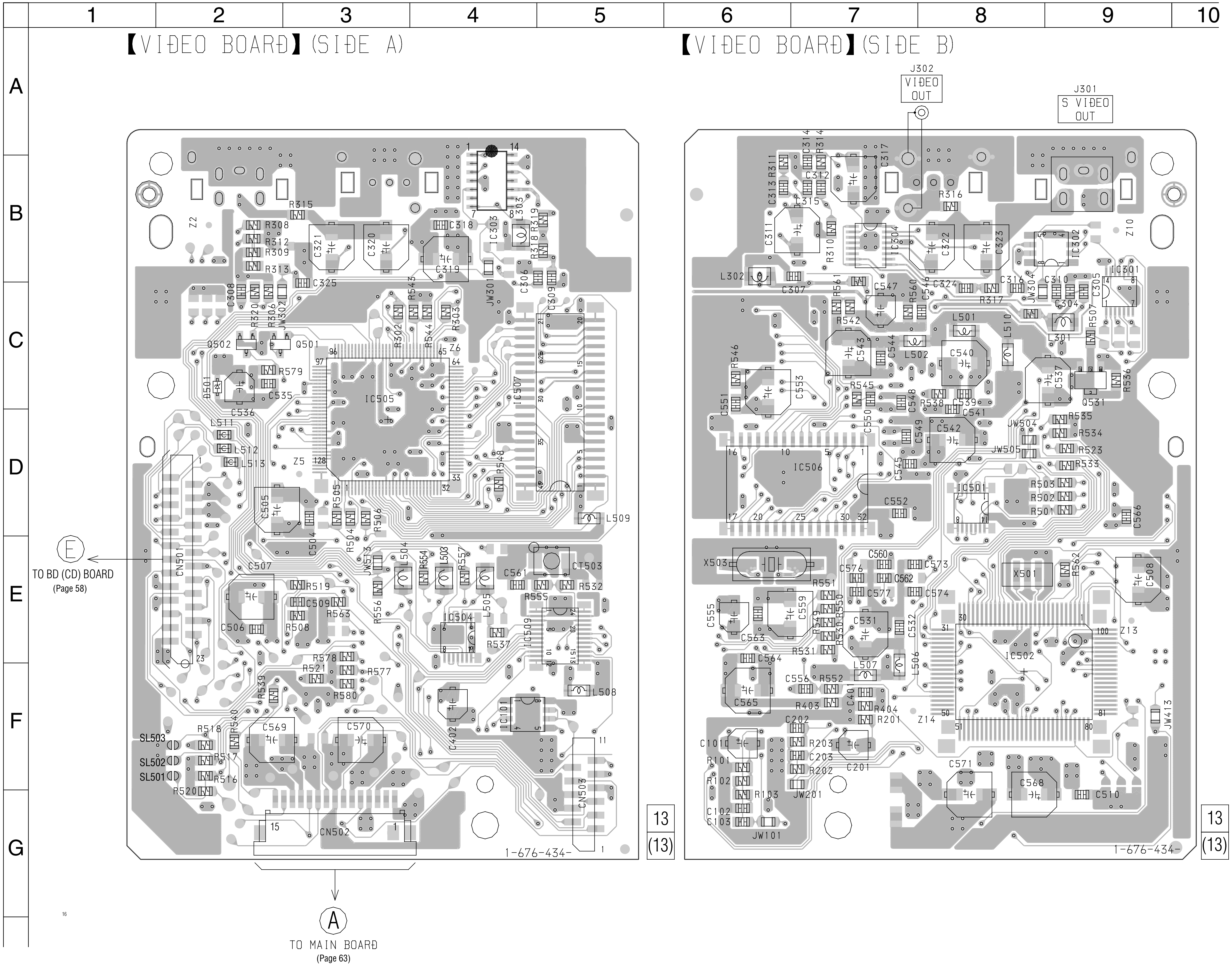
7-35. PRINTED WIRING BOARDS –VIDEO CD SECTION–

• See page 48 for Circuit Boards Location.

There are a few cases that the part printed on this diagram isn't mounted in this model.

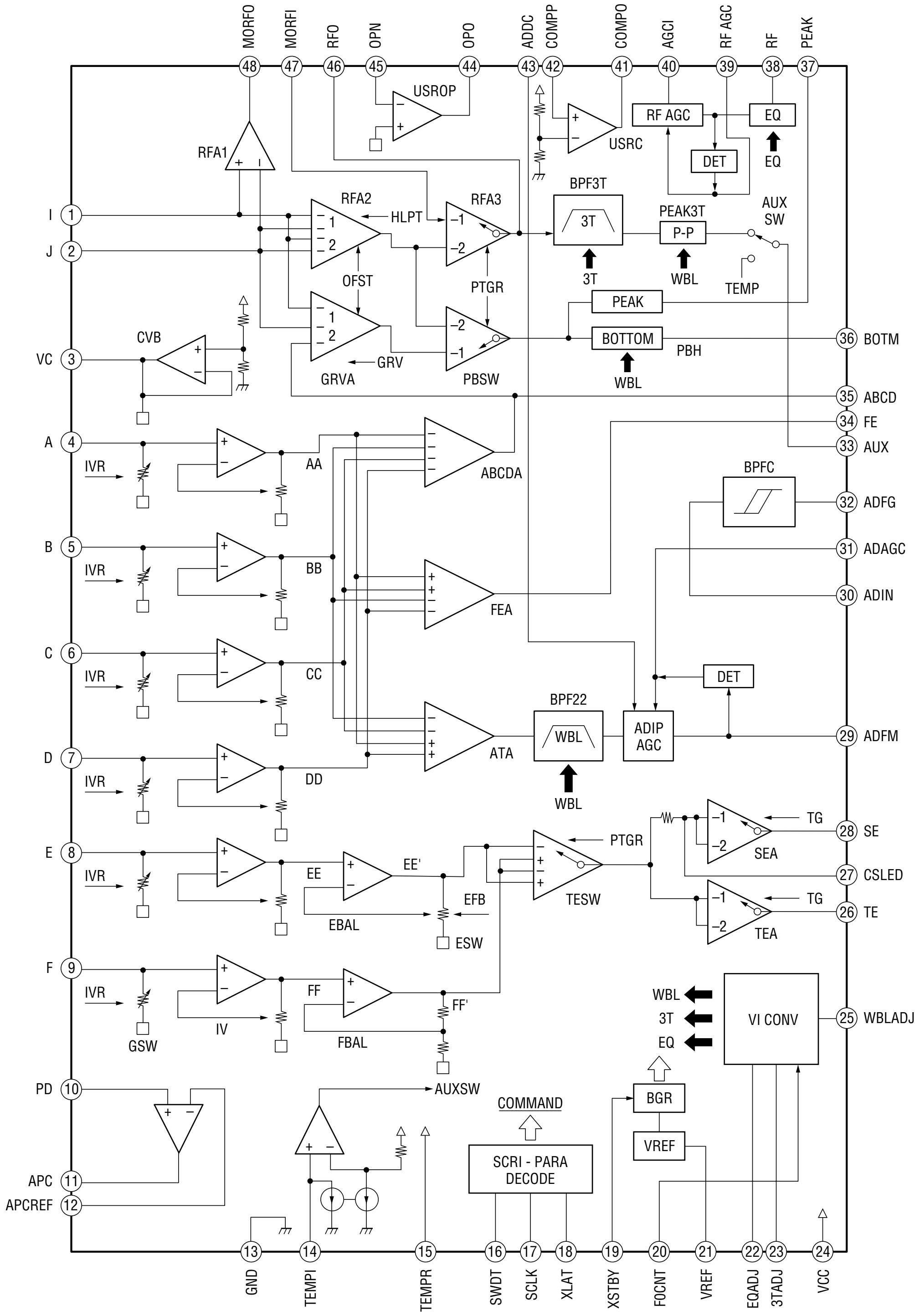
• **Semiconductor Location**

Ref. No.	Location
D501	C-2
IC101	F-4
IC301	B-9
IC302	B-9
IC303	B-4
IC304	B-7
IC501	D-8
IC502	E-9
IC504	E-4
IC505	C-3
IC506	D-7
IC507	C-4
IC509	E-5
Q501	C-3
Q502	C-2
Q531	C-9

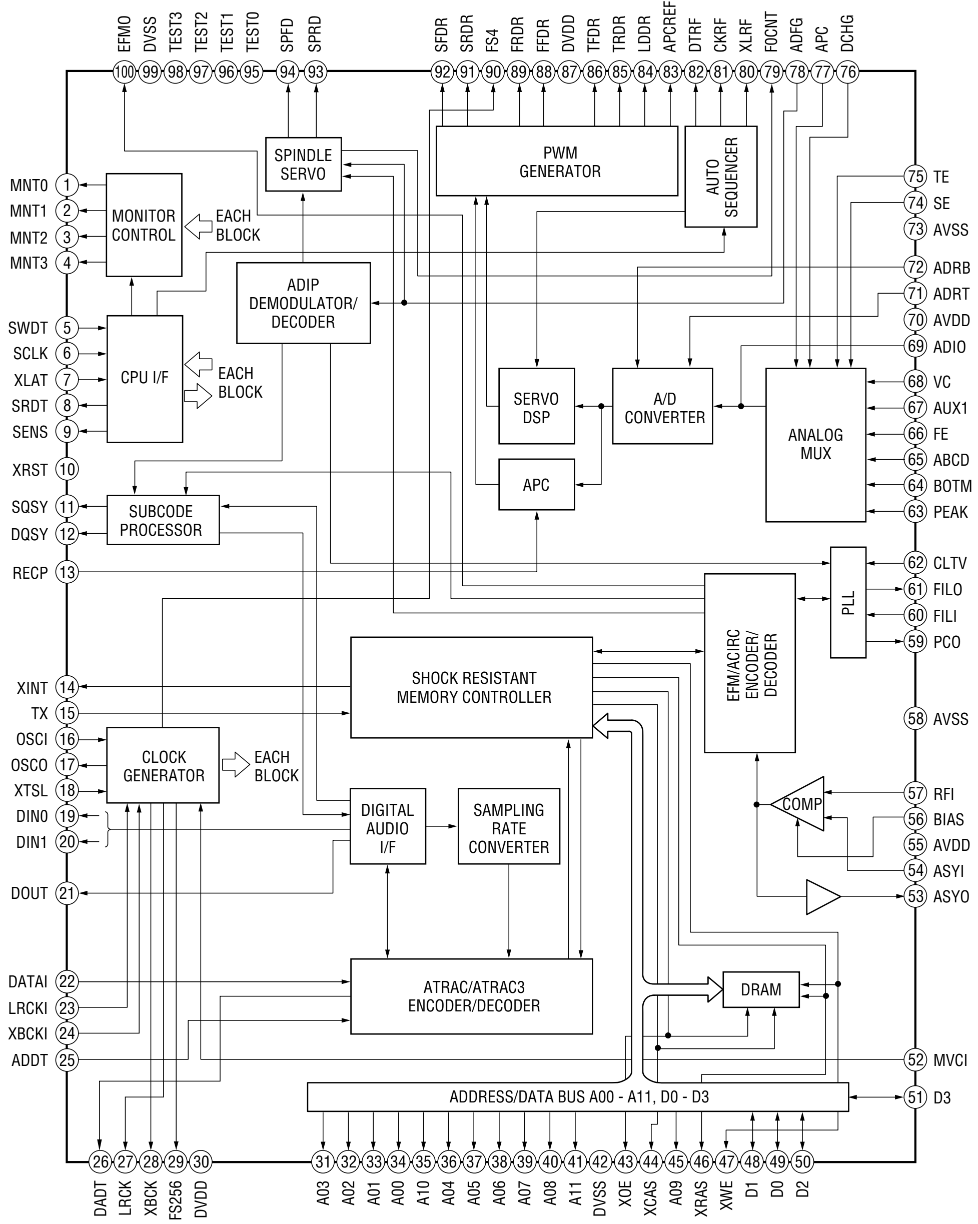

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
【VIDEO BOARD】(SIDE A)
【VIDEO BOARD】(SIDE B)
J302
VIDEO OUT
J301
S VIDEO OUT
E
TO BD (CD) BOARD
(Page 58)
A
TO MAIN BOARD
(Page 63)
CN501
CN502
CN503
IC505
IC507
IC504
IC509
IC101
IC303
IC506
IC501
IC502
IC304
IC302
IC301
Q501
Q502
Q531
D501
X501
X503
SL501
SL502
SL503
1-676-434-
13
(13)

7-36. IC BLOCK DIAGRAMS

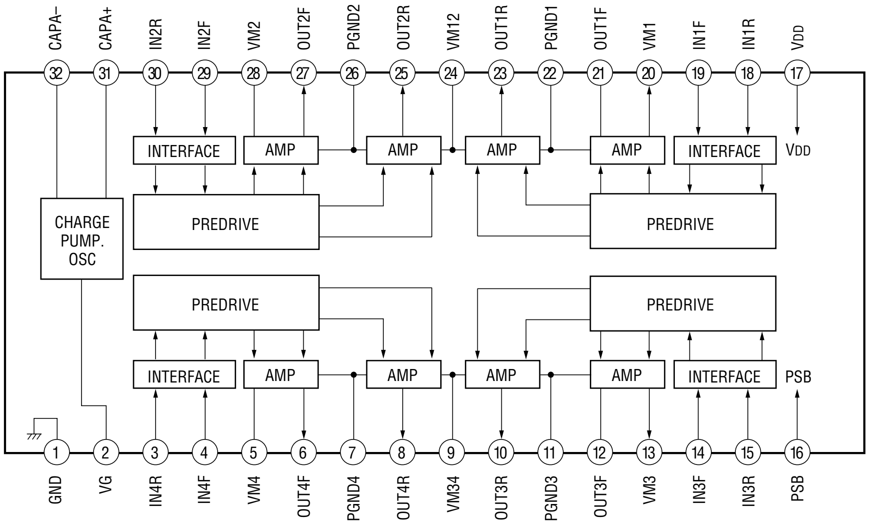
IC101 CXA2523AR (BD (MD) BOARD)


MORFO
MORFI
RFO
OPN
OPO
ADDC
COMPP
COMPO
AGCI
RF AGC
RF
PEAK
48
47
46
45
44
43
42
41
40
39
38
37
USROP
USRC
RF AGC
EQ
EQ
DET
RFA1
BPF3T
3T
3T
PEAK3T
P-P
WBL
AUX SW
TEMP
RFA2
HLPT
RFA3
OFST
PTGR
PEAK
BOTTOM
PBH
WBL
CVB
GRV
GRVA
PBSW
I 1
J 2
VC 3
A 4
B 5
C 6
D 7
E 8
F 9
PD 10
APC 11
APCREF 12
36 BOTM
35 ABCD
34 FE
33 AUX
32 ADFG
31 ADAGC
30 ADIN
29 ADFM
28 SE
27 CSLED
26 TE
25 WBLADJ
IVR
AA
ABCDA
BB
FEA
BPFC
CC
DET
BPF22
WBL
ADIP AGC
DD
ATA
WBL
TG
SEA
PTGR
EE
EE'
TESW
EFB
EBAL
ESW
TG
TEA
FF
FF'
FBAL
IV
GSW
WBL
3T
EQ
VI CONV
AUXSW
COMMAND
BGR
VREF
SCRI - PARA DECODE
13 GND
14 TEMPI
15 TEMPR
16 SWDT
17 SCLK
18 XLAT
19 XSTBY
20 FOCNT
21 VREF
22 EQADJ
23 3TADJ
24 VCC

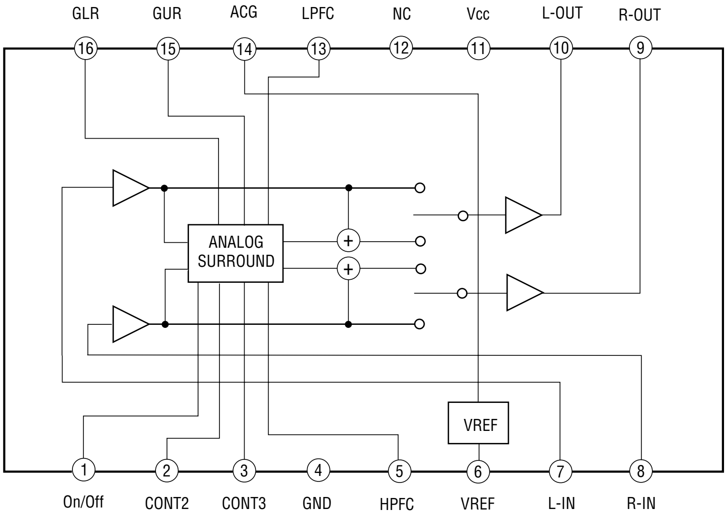
IC151 CXD2662R (BD (MD) BOARD)


EFMO
DVSS
TEST3
TEST2
TEST1
TEST0
SPFD
SPRD
SFDR
SRDR
FS4
FRDR
FFDR
DVDD
TFDR
TRDR
LDDR
APCREF
DTRF
CKRF
XLRF
FOCNT
ADFG
APC
DCHG
MNT0
MNT1
MNT2
MNT3
SWDT
SCLK
XLAT
SRDT
SENS
XRST
SQSY
DQSY
RECP
XINT
TX
OSCI
OSCO
XTSL
DIN0
DIN1
DOUT
DATAI
LRCKI
XBCKI
ADDT
TE
SE
AVSS
ADRB
ADRT
AVDD
ADIO
VC
AUX1
FE
ABCD
BOTM
PEAK
CLTV
FILO
FILI
PCO
AVSS
RFI
BIAS
AVDD
ASYI
ASYO
MVCI
D3
DADT
LRCK
XBCK
FS256
DVDD
A03
A02
A01
A00
A10
A04
A05
A06
A07
A08
A11
DVSS
XOE
XCAS
A09
XRAS
XWE
D1
D0
D2
SPINDLE SERVO
PWM GENERATOR
AUTO SEQUENCER
MONITOR CONTROL
EACH BLOCK
ADIP DEMODULATOR/ DECODER
CPU I/F
EACH BLOCK
SERVO DSP
A/D CONVERTER
ANALOG MUX
APC
SUBCODE PROCESSOR
PLL
EFM/ACIRC ENCODER/ DECODER
SHOCK RESISTANT MEMORY CONTROLLER
CLOCK GENERATOR
EACH BLOCK
DIGITAL AUDIO I/F
SAMPLING RATE CONVERTER
COMP
DRAM
ATRAC/ATRAC3 ENCODER/DECODER
ADDRESS/DATA BUS A00 - A11, D0 - D3

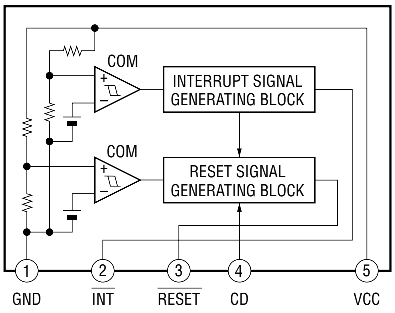
IC141 BH6511FS-E2 (BD (MD) BOARD)


CAPA–
CAPA+
IN2R
IN2F
VM2
OUT2F
PGND2
OUT2R
VM12
OUT1R
PGND1
OUT1F
VM1
IN1F
IN1R
VDD
INTERFACE
AMP
AMP
AMP
AMP
INTERFACE
VDD
CHARGE PUMP. OSC
PREDRIVE
PREDRIVE
PREDRIVE
PREDRIVE
INTERFACE
AMP
AMP
AMP
AMP
INTERFACE
PSB
GND
VG
IN4R
IN4F
VM4
OUT4F
PGND4
OUT4R
VM34
OUT3R
PGND3
OUT3F
VM3
IN3F
IN3R
PSB

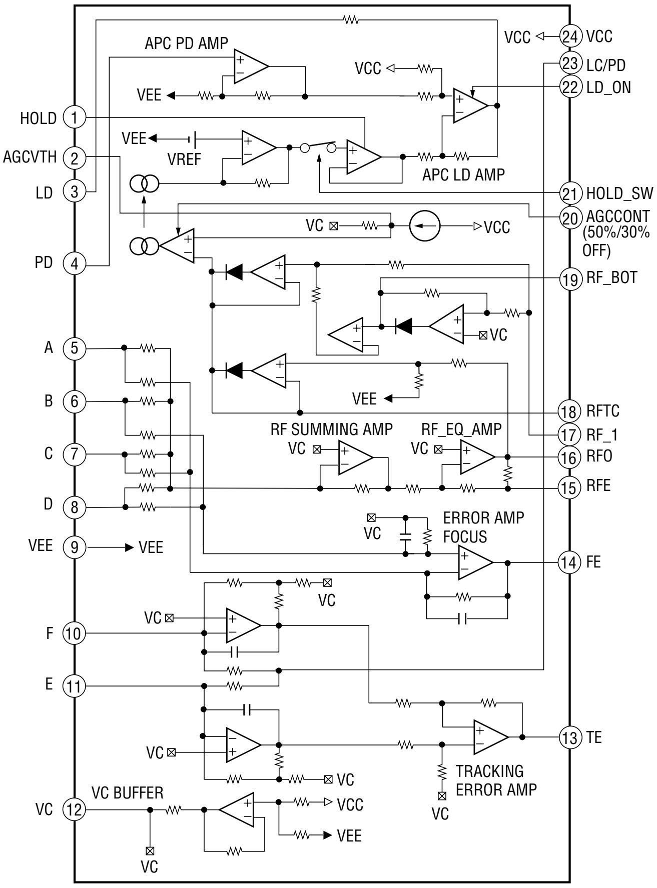
IC202 LA2615 (MAIN BOARD)


GLR
GUR
ACG
LPFC
NC
Vcc
L-OUT
R-OUT
16
15
14
13
12
11
10
9
ANALOG SURROUND
+
+
VREF
1
2
3
4
5
6
7
8
On/Off
CONT2
CONT3
GND
HPFC
VREF
L-IN
R-IN

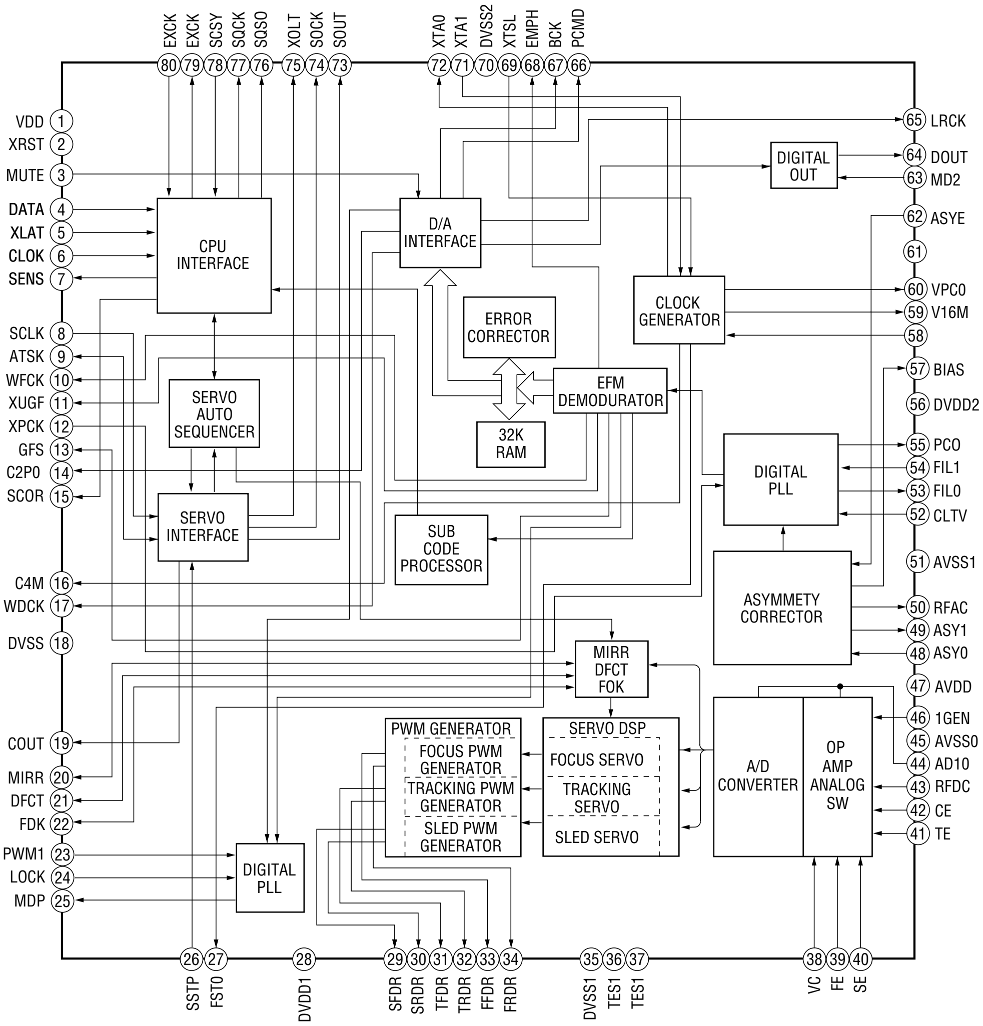
IC502 M62016L (MAIN BOARD)


COM
INTERRUPT SIGNAL GENERATING BLOCK
COM
RESET SIGNAL GENERATING BLOCK
1
2
3
4
5
GND
INT
RESET
CD
VCC

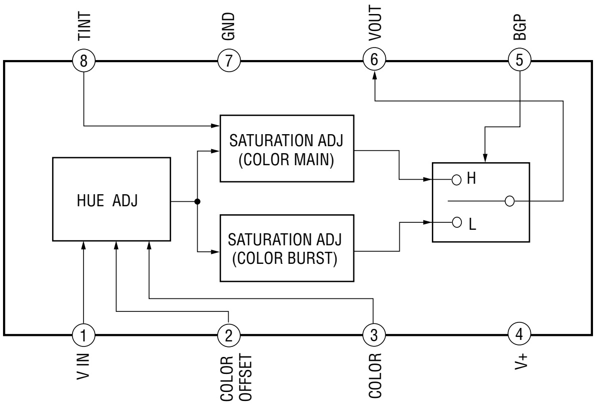
IC103 CXA2568M-T6 (BD (CD) BOARD)


APC PD AMP
VCC
24 VCC
23 LC/PD
22 LD_ON
VCC
VEE
HOLD 1
AGCVTH 2
LD 3
VEE
VREF
APC LD AMP
21 HOLD_SW
20 AGCCONT (50%/30% OFF)
VC
VCC
PD 4
19 RF_BOT
VC
A 5
B 6
C 7
D 8
VEE
18 RFTC
17 RF_1
16 RFO
15 RFE
RF SUMMING AMP
RF_EQ_AMP
VC
VC
VC
ERROR AMP FOCUS
VEE 9
VEE
14 FE
VC
VC
F 10
E 11
VC
13 TE
VC
TRACKING ERROR AMP
VC
VC BUFFER
VC 12
VCC
VEE
VC

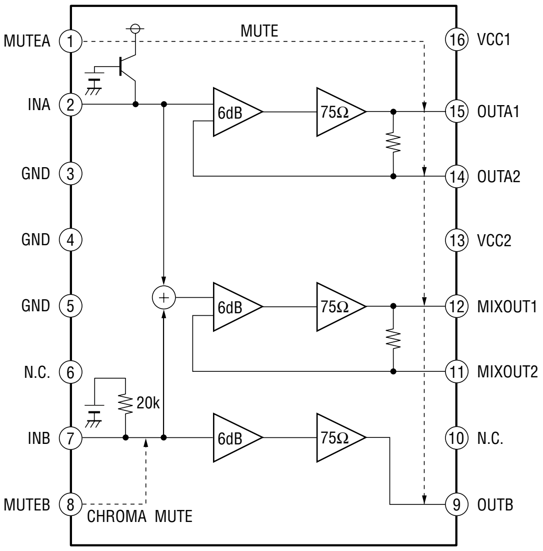
IC101 CXD3008Q (BD (CD) BOARD)


EXCK 80
EXCK 79
SCSY 78
SQCK 77
SQSO 76
XOLT 75
SOCK 74
SOUT 73
XTA0 72
XTA1 71
DVSS2 70
XTSL 69
EMPH 68
BCK 67
PCMD 66
VDD 1
XRST 2
MUTE 3
DATA 4
XLAT 5
CLOK 6
SENS 7
SCLK 8
ATSK 9
WFCK 10
XUGF 11
XPCK 12
GFS 13
C2P0 14
SCOR 15
C4M 16
WDCK 17
DVSS 18
COUT 19
MIRR 20
DFCT 21
FDK 22
PWM1 23
LOCK 24
MDP 25
SSTP 26
FST0 27
DVDD1 28
SFDR 29
SRDR 30
TFDR 31
TRDR 32
FFDR 33
FRDR 34
DVSS1 35
TES1 36
TES1 37
VC 38
FE 39
SE 40
TE 41
CE 42
RFDC 43
AD10 44
AVSS0 45
1GEN 46
AVDD 47
ASY0 48
ASY1 49
RFAC 50
AVSS1 51
CLTV 52
FIL0 53
FIL1 54
PCO 55
DVDD2 56
BIAS 57
58
V16M 59
VPC0 60
61
ASYE 62
MD2 63
DOUT 64
LRCK 65
CPU INTERFACE
D/A INTERFACE
DIGITAL OUT
ERROR CORRECTOR
CLOCK GENERATOR
SERVO AUTO SEQUENCER
EFM DEMODURATOR
32K RAM
DIGITAL PLL
SERVO INTERFACE
SUB CODE PROCESSOR
ASYMMETY CORRECTOR
MIRR DFCT FOK
PWM GENERATOR
FOCUS PWM GENERATOR
TRACKING PWM GENERATOR
SLED PWM GENERATOR
SERVO DSP
FOCUS SERVO
TRACKING SERVO
SLED SERVO
A/D CONVERTER
OP AMP ANALOG SW
DIGITAL PLL

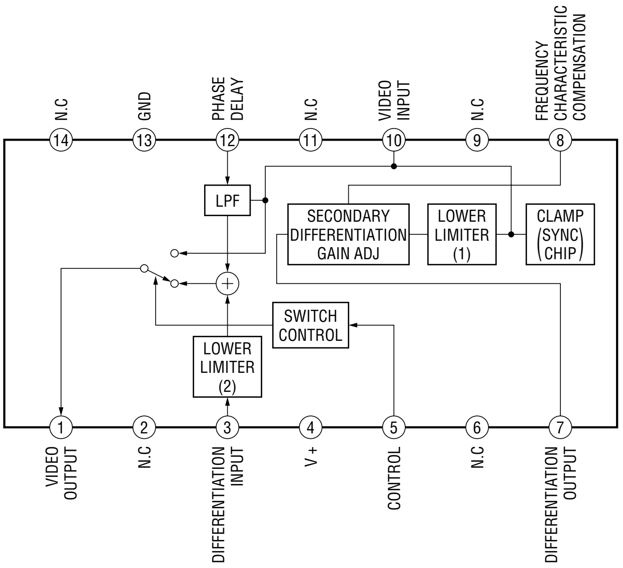
IC302 NJM2255M (VIDEO BOARD)


TINT
GND
VOUT
BGP
8
7
6
5
SATURATION ADJ (COLOR MAIN)
HUE ADJ
H
L
SATURATION ADJ (COLOR BURST)
1
2
3
4
V IN
COLOR OFFSET
COLOR
V+

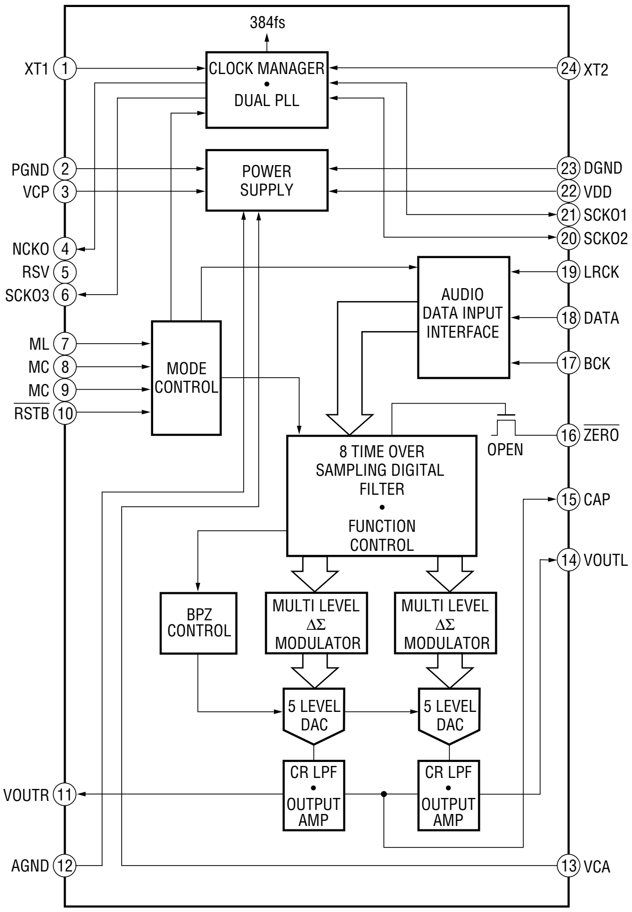
IC304 BA7665FS-E2 (VIDEO BOARD)


MUTEA 1
MUTE
INA 2
GND 3
GND 4
GND 5
N.C. 6
INB 7
MUTEB 8
CHROMA MUTE
6dB
75Ω
6dB
75Ω
20k
6dB
75Ω
16 VCC1
15 OUTA1
14 OUTA2
13 VCC2
12 MIXOUT1
11 MIXOUT2
10 N.C.
9 OUTB

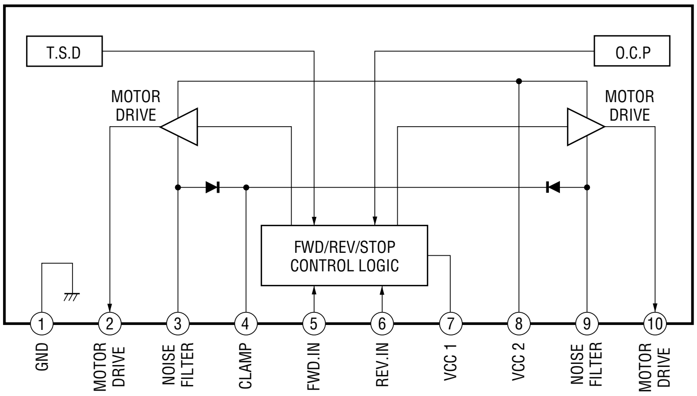
IC303 NJM2209M (VIDEO BOARD)


N.C
GND
PHASE DELAY
N.C
VIDEO INPUT
N.C
FREQUENCY CHARACTERISTIC COMPENSATION
14
13
12
11
10
9
8
LPF
SECONDARY DIFFERENTIATION GAIN ADJ
LOWER LIMITER (1)
CLAMP (SYNC CHIP)
SWITCH CONTROL
LOWER LIMITER (2)
1
2
3
4
5
6
7
VIDEO OUTPUT
N.C
DIFFERENTIATION INPUT
V +
CONTROL
N.C
DIFFERENTIATION OUTPUT

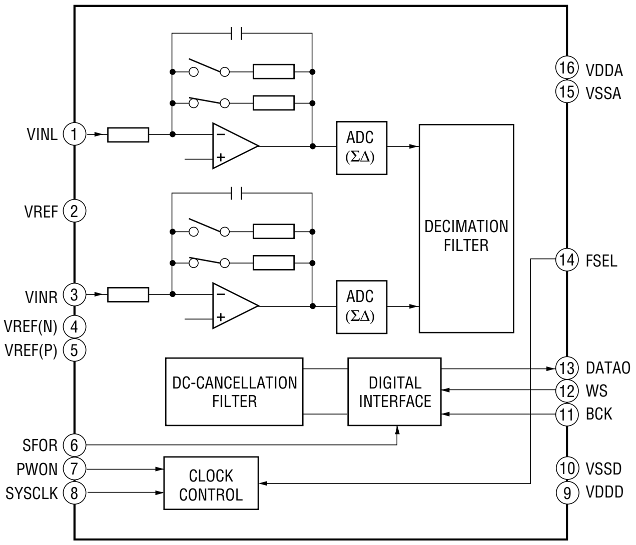
IC509 PCM1727E-2/T2 (VIDEO BOARD)


384fs
XT1 1
CLOCK MANAGER • DUAL PLL
24 XT2
PGND 2
VCP 3
POWER SUPPLY
23 DGND
22 VDD
21 SCKO1
20 SCKO2
NCKO 4
RSV 5
SCKO3 6
AUDIO DATA INPUT INTERFACE
19 LRCK
18 DATA
17 BCK
ML 7
MC 8
MC 9
RSTB 10
MODE CONTROL
OPEN
16 ZERO
8 TIME OVER SAMPLING DIGITAL FILTER • FUNCTION CONTROL
15 CAP
14 VOUTL
BPZ CONTROL
MULTI LEVEL ΔΣ MODULATOR
MULTI LEVEL ΔΣ MODULATOR
5 LEVEL DAC
5 LEVEL DAC
CR LPF • OUTPUT AMP
CR LPF • OUTPUT AMP
VOUTR 11
AGND 12
13 VCA

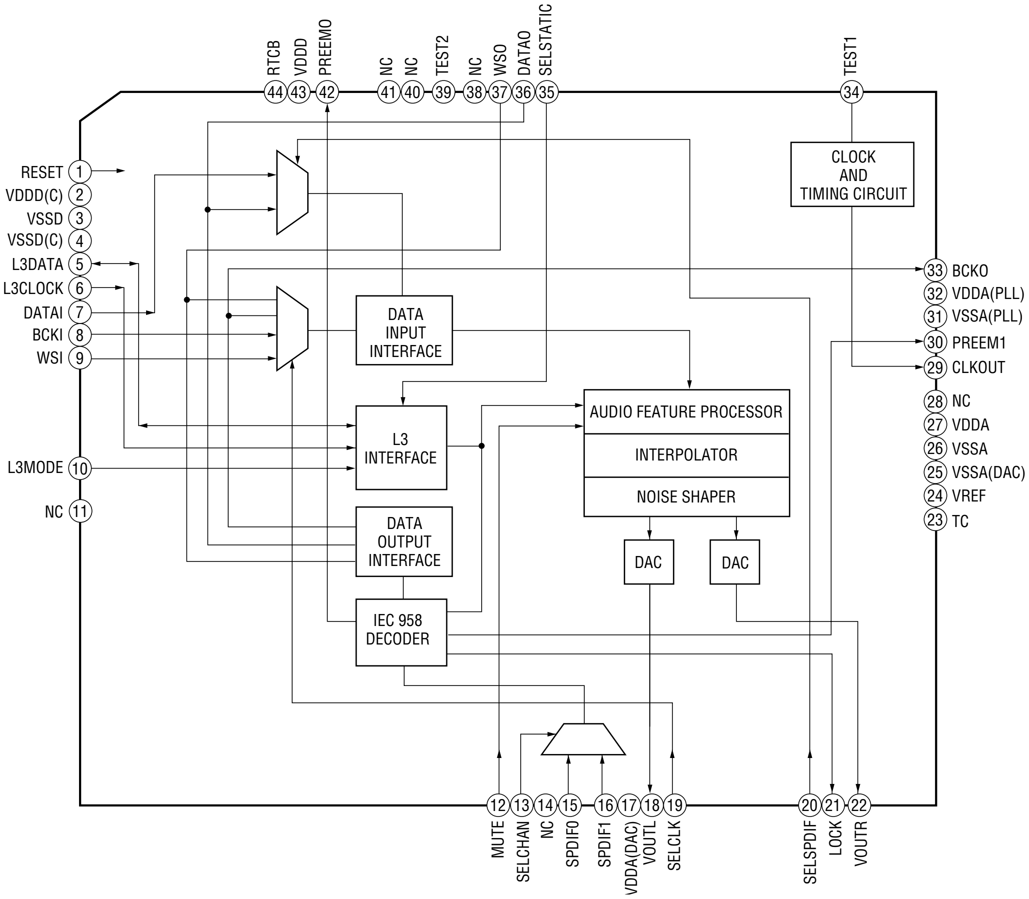
IC1004 LB1641 (DIGITAL BOARD)


T.S.D
O.C.P
MOTOR DRIVE
MOTOR DRIVE
FWD/REV/STOP CONTROL LOGIC
1 GND
2 MOTOR DRIVE
3 NOISE FILTER
4 CLAMP
5 FWD.IN
6 REV.IN
7 VCC 1
8 VCC 2
9 NOISE FILTER
10 MOTOR DRIVE

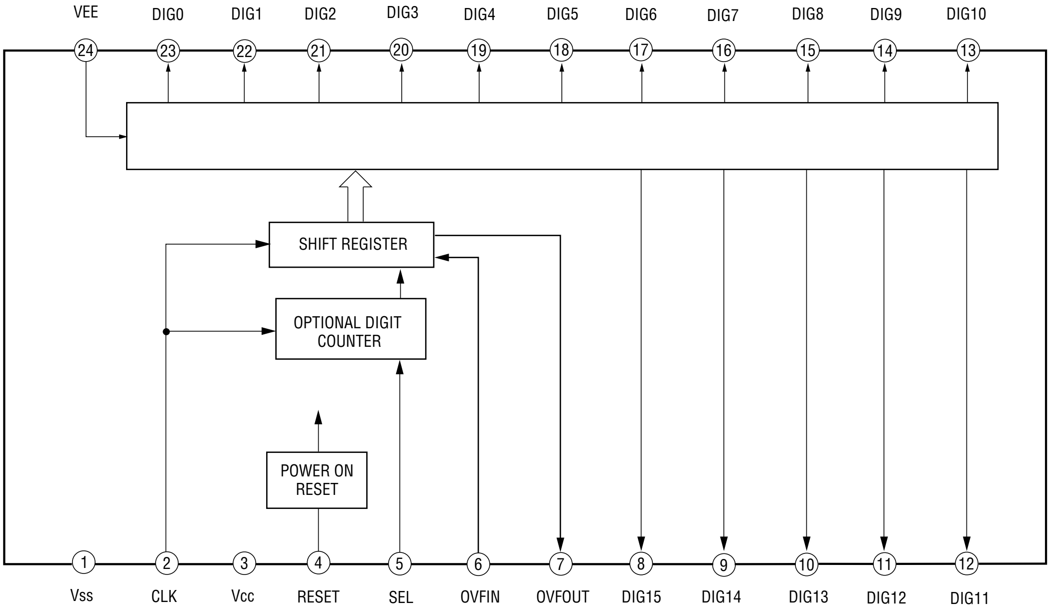
IC1005 µDA1360TS (DIGITAL BOARD)


VINL 1
VREF 2
VINR 3
VREF(N) 4
VREF(P) 5
SFOR 6
PWON 7
SYSCLK 8
16 VDDA
15 VSSA
14 FSEL
13 DATAO
12 WS
11 BCK
10 VSSD
9 VDDD
ADC (ΣΔ)
ADC (ΣΔ)
DECIMATION FILTER
DC-CANCELLATION FILTER
DIGITAL INTERFACE
CLOCK CONTROL

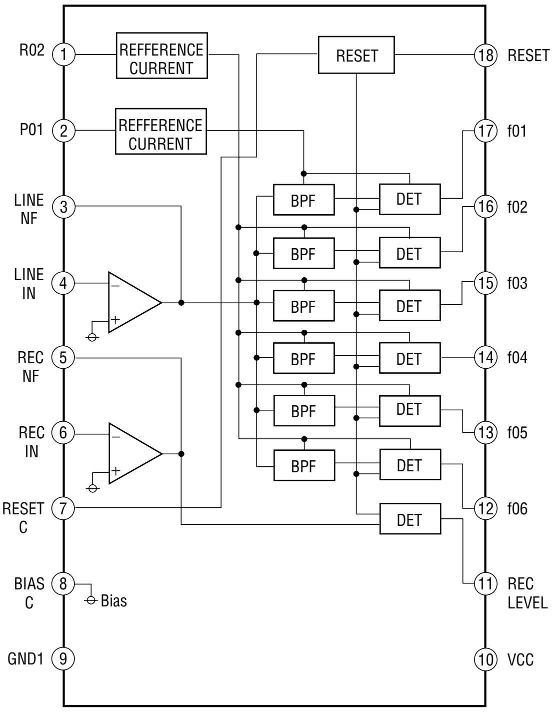
IC1006 µDA1350AH (DIGITAL BOARD)


RTCB 44
VDDD 43
PREEMO 42
NC 41
NC 40
TEST2 39
NC 38
WSO 37
DATAO 36
SELSTATIC 35
TEST1 34
RESET 1
VDDD(C) 2
VSSD 3
VSSD(C) 4
L3DATA 5
L3CLOCK 6
DATAI 7
BCKI 8
WSI 9
L3MODE 10
NC 11
33 BCKO
32 VDDA(PLL)
31 VSSA(PLL)
30 PREEM1
29 CLKOUT
28 NC
27 VDDA
26 VSSA
25 VSSA(DAC)
24 VREF
23 TC
12 MUTE
13 SELCHAN
14 NC
15 SPDIF0
16 SPDIF1
17 VDDA(DAC)
18 VOUTL
19 SELCLK
20 SELSPDIF
21 LOCK
22 VOUTR
CLOCK AND TIMING CIRCUIT
DATA INPUT INTERFACE
L3 INTERFACE
DATA OUTPUT INTERFACE
IEC 958 DECODER
AUDIO FEATURE PROCESSOR
INTERPOLATOR
NOISE SHAPER
DAC
DAC

IC703 M35501P (PANEL BOARD)


VEE
DIG0
DIG1
DIG2
DIG3
DIG4
DIG5
DIG6
DIG7
DIG8
DIG9
DIG10
24
23
22
21
20
19
18
17
16
15
14
13
SHIFT REGISTER
OPTIONAL DIGIT COUNTER
POWER ON RESET
1
2
3
4
5
6
7
8
9
10
11
12
Vss
CLK
Vcc
RESET
SEL
OVFIN
OVFOUT
DIG15
DIG14
DIG13
DIG12
DIG11

IC704 BA3830F (PANEL BOARD)


R02
1
REFFERENCE CURRENT
P01
2
REFFERENCE CURRENT
LINE NF
3
LINE IN
4
REC NF
5
REC IN
6
RESET C
7
BIAS C
8
Bias
GND1
9
RESET
18
RESET
17
f01
16
f02
15
f03
14
f04
13
f05
12
f06
11
REC LEVEL
10
VCC
BPF
DET
–
+

7-38. IC PIN FUNCTIONS

• IC502 M30622MGA-A30FP (CD MECHANISM CONTROLLER) (VIDEO BOARD)

Pin No.	Pin Name	I/O	Description
1	SENSE	I	Internal status (SENSE) signal input from the CXD3008Q (IC101)
2	SENSE CLK	O	Sense serial data reading clock signal output to the CXD3008Q (IC101)
3	RESOLUTION	O	Y resolution output
4	CHROMA LEVEL	O	Chroma level output
5	DSP CLK	O	Serial data transfer clock signal output to the CXD3008Q (IC101)
6	TSENS	O	Not used (open)
7	REMOTE IN	I	Remote control signal input terminal Not used (open)
8	BYTE	I	External data bus line byte selection signal input “L”: 16 bit, “H”: 8 bit (fixed at “L”)
9	CN VSS	—	Ground terminal
10	DSP MUTE	O	Muting on/off control signal output to the CXD3008Q (IC101) “H”: muting on
11	CTRL1	O	Clock selection signal output to the CXD3008Q (IC101) “L”: 16.9344 MHz (double speed), “H”: 33.8688 MHz
12	$\overline{\text{XRESET}}$	I	Reset signal input from the system controller (IC501) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
13	XOUT	O	Main system clock output terminal (10 MHz)
14	VSS	—	Ground terminal
15	XIN	I	Main system clock input terminal (10 MHz)
16	VCC	—	Power supply terminal (+5V)
17	NMI	I	Non-maskable interrupt input terminal (fixed at “H” in this set)
18	SCOR	I	Subcode sync (S0+S1) detection signal input from the CXD3008Q (IC101)
19	DSENS	O	Not used (open)
20	$\overline{\text{CL680 HINT}}$	I	Interrupt request signal input from the MPEG video/audio decoder (IC505)
21	CL680 HSEL	O	
22	DF LATCH	O	Serial data latch pulse output to the D/A converter (IC509) “L” active
23	CL680 HRDY	—	
24	$\overline{\text{CL680 RESET}}$	O	Reset signal output to the MPEG video/audio decoder (IC505) “L”: reset
25	H.SYNC IN	I	Horizontal sync signal input
26	BGP	O	Burst gate pulse signal output
27	LPH	O	AGC hold signal output
28	LD ON	O	Laser power selection signal output to the CXA2568M (IC103) “H”: laser on
29	12C.CLK	I/O	I^{2}C clock signal from CD mechanism control (IC501).
30	12C.DATA	I/O	I^{2}C data signal from CD mechanism control (IC501).
31	DATA1O	O	Serial data output to the MPEG video/audio decoder (IC506) and D/A converter (IC509)
32	DATA1I	I	Serial data input from the MPEG video/audio decoder (IC506)
33	CLK1	O	Serial data transfer clock signal output to the MPEG video/audio decoder (IC506) and D/A converter (IC509)
34	RTS1	O	RTS signal to serial port (check connector).
35	XVLEVEL.DOWN	O	Not used (open)
36	SUBQ DATA	I	Sub-code Q data input from the CXD3008Q (IC101)
37	SUBQ CLK	O	Sub-code Q data reading clock signal output to the CXD3008Q (IC101)
38	P.ON	O	Power on/off control signal output terminal Not used (open)
39	BUS XRDY	I	Ready signal input terminal Not used (fixed at “H”)
40	BUS	O	Not used (open)
41	BUS XHOLD	I	Hold signal input terminal Not used (fixed at “H”)
42, 43	BUS	O	Not used (open)
44	OSD.LANGUAGE	I	OSD language select input terminal “H”: English, “L”: China
45	VSYNC	I	Vertical sync signal input
46	BUS XWRL	O	Bus write signal output.
47	LO.BOOST	O	Not used (open)
48	AUDIO MUTE	O	Audio muting on/off control signal output terminal “L”: muting on Not used (open)
49	LOAD OUT	O	Loading motor drive signal output terminal Not used (open)
50	LOAD IN	O	Loading motor drive signal output terminal Not used (open)
51	INSW	I	Disc detection (load in) switch input terminal Not used (fixed at “H”)

Pin No.	Pin Name	I/O	Description
52	OUTSW	I	Disc detection (load out) switch input terminal Not used (fixed at “H”)
53	MODEL1	I	Destination setting terminal (fixed at “L”)
54	MODEL2	I	Destination setting terminal (fixed at “L”)
55	TBLL	—	Not used (open)
56	TBLR	—	Not used (open)
57 to 59	ENC1 to ENC3	—	Not used (open)
60, 61		—	Not used (open)
62	VCC	—	Power supply terminal (+5V)
63		—	Not used (open)
64	VSS	—	Ground terminal
65	V.MUTE	O	Video muting on/off control signal output
66 to 72	A6 to A0	O	Address signal output for the external device
73	TEST LED	O	LED drive signal output for the self diagnosis indicator (D502) Normally: “L” (LED on)
74	TEST1	I	Setting terminal for the test mode 1 (for VCD check) Normally: fixed at “H” (“L”: test mode)
75	TEST2	I	Setting terminal for the test mode 2 (for SERVO check) Normally: fixed at “H” (“L”: test mode)
76	TEST3	I	Setting terminal for the test mode 3 Normally: fixed at “H” (“L”: test mode) Not used (fixed at “H”)
77	DEVICE RESET	O	System reset signal output to the CXD3008Q (IC101), BA5974FP (IC102) and D/A converter (IC509) “L”: reset
78	STANDBY	O	Standby on/off control signal output terminal Not used (open)
79	FL CS	O	Chip select signal output terminal Not used (open)
80	FLBLK	O	Blank control signal output terminal Not used (open)
81 to 88	D7 to D0	I/O	Two-way data bus with the external device Not used (open)
89	MIC CTRL	—	Not used.
90 to 92	KEY1 to KEY3	I	Key input terminal Not used (fixed at “H”)
93	NT/PAL	I	Video system select input terminal (open: AUTO)
94	MUSIC VOL	—	Not used.
95	DSP DATA	O	Serial data output to the CXD3008Q (IC101)
96	AVSS	—	Ground terminal (for A/D conversion)
97	DSP LATCH	O	Serial data latch pulse output to the CXD3008Q (IC101)
98	VREF	I	Reference voltage (+5V) input terminal (for A/D conversion)
99	AVCC	—	Power supply terminal (+5V) (for A/D conversion)
100	AMP ON	—	Not used.

• IC101 CXA2523AR RF Amplifier (BD (MD) BOARD)

Pin No.	Pin Name	I/O	Function
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage (+1.5V) generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input
11	APC	O	Laser APC output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data input from the CXD2662R
17	SCLK	I	Serial clock input from the CXD2662R
18	XLAT	I	Latch signal input from the CXD2662R “L”: Latch
19	XSTBY	I	Stand by signal input “L”: Stand by
20	F0CNT	I	Center frequency control voltage input of BPF22, BPF3T, EQ from the CXD2662R
21	VREF	O	Reference voltage output (Not used)
22	EQADJ	I/O	Center frequency setting pin for the internal circuit EQ
23	3TADJ	I/O	Center frequency setting pin for the internal circuit BPF3T
24	Vcc	—	+3V power supply
25	WBLADJ	I/O	Center frequency setting pin for the internal circuit BPF22
26	TE	O	Tracking error signal output to the CXD2662R
27	CSLED	—	External capacitor connection pin for the sled error signal LPF
28	SE	O	Sled error signal output to the CXD2662R
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP signal comparator input ADFM is connected with AC coupling
31	ADAGC	—	External capacitor connection pin for AGC of ADIP
32	ADFG	O	ADIP duplex signal output to the CXD2662R
33	AUX	O	I_3 signal/temperature signal output to the CXD2662R (Switching with a serial command)
34	FE	O	Focus error signal output to the CXD2662R
35	ABCD	O	Light amount signal output to the CXD2662R
36	BOTM	O	RF/ABCD bottom hold signal output to the CXD2662R
37	PEAK	O	RF/ABCD peak hold signal output to the CXD2662R
38	RF	O	RF equalizer output to the CXD2662R
39	RFAGC	—	External capacitor connection pin for the RF AGC circuit
40	AGCI	I	Input to the RF AGC circuit The RF amplifier output is input with AC coupling
41	COMPO	O	User comparator output (Not used)
42	COMPP	I	User comparator input (Fixed at “L”)
43	ADDC	I/O	External capacitor pin for cutting the low band of the ADIP amplifier
44	OPO	O	User operation amplifier output (Not used)
45	OPN	I	User operation amplifier inversion input (Fixed at “L”)
46	RFO	O	RF amplifier output
47	MORFI	I	Groove RF signal is input with AC coupling
48	MORFO	O	Groove RF signal output

- Abbreviation
  APC: Auto Power Control
  AGC: Auto Gain Control

• IC151 CXD2662R Digital Signal Processor, Digital Servo Signal Processor **(BD (MD) BOARD)**

Pin No.	Pin Name	I/O	Function
1	MNT0 (FOK)	O	FOK signal output to the system control (monitor output) "H" is output when focus is on
2	MNT1 (SHCK)	O	Track jump detection signal output to the system control (monitor output)
3	MNT2 (XBUSY)	O	Monitor 2 output to the system control (monitor output)
4	MNT3 (SLOC)	O	Monitor 3 output to the system control (monitor output)
5	SWDT	I	Writing data signal input from the system control
6	SCLK	I (S)	Serial clock signal input from the system control
7	XLAT	I (S)	Serial latch signal input from the system control
8	SRDT	O (3)	Reading data signal output to the system control
9	SENS	O (3)	Internal status (SENSE) output to the system control
10	XRST	I (S)	Reset signal input from the system control "L": Reset
11	SQSY	O	Subcode Q sync (SCOR) output to the system control "L" is output every 13.3 msec. Almost all, "H" is output
12	DQSY	O	Digital In U-bit CD format or MD format subcode Q sync (SCOR) output to the system control
13	RECP	I	Laser power switching input from the system control "H": Recording, "L": Playback
14	XINT	O	Interrupt status output to the system control
15	TX	I	Recording data output enable input from the system control
16	OSCI	I	System clock input (512Fs=22.5792 MHz)
17	OSCO	O	System clock output (512Fs=22.5792 MHz) (Not used)
18	XTSL	I	System clock frequency setting "L": 45.1584 MHz, "H": 22.5792 MHz (Fixed at "H")
19	DIN0	I	Digital audio input (Optical input)
20	DIN1	I	Digital audio input (Optical input)
21	DOUT	O	Digital audio output (Optical output)
22	DADTI	I	Serial data input
23	LRCKI	I	LR clock input "H" : Lch, "L" : R ch
24	XBCKI	I	Serial data clock input
25	ADDT	I	Data input from the A/D converter
26	DADT	O	Data output to the D/A converter
27	LRCK	O	LR clock output for the A/D and D/A converter (44.1 kHz)
28	XBCK	O	Bit clock output to the A/D and D/A converter (2.8224 MHz)
29	FS256	O	11.2896 MHz clock output (Not used)
30	DVDD	—	+3V power supply (Digital)
31 to 34	A03 to A00	O	DRAM address output
35	A10	O	DRAM address output (Not used)
36 to 40	A04 to A08	O	DRAM address output
41	A11	O	DRAM address output (Not used)
42	DVSS	—	Ground (Digital)
43	XOE	O	Output enable output for DRAM
44	XCAS	O	$\overline{\text{CAS}}$ signal output for DRAM
45	A09	O	Address output for DRAM
46	XRAS	O	$\overline{\text{RAS}}$ signal output for DRAM
47	XWE	O	Write enable signal output for DRAM
48	D1	I/O	Data input/output for DRAM
49	D0	I/O	
50, 51	D2, D3	I/O	
52	MVCI	I (S)	Clock input from an external VCO (Fixed at "L")
53	ASYO	O	Playback EFM duplex signal output

* I (S) stands for Schmidt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

Pin No.	Pin Name	I/O	Function
54	ASYI	I (A)	Playback EFM comparator slice level input
55	AVDD	—	+3V power supply (Analog)
56	BIAS	I (A)	Playback EFM comparator bias current input
57	RFI	I (A)	Playback EFM RF signal input
58	AVSS	—	Ground (Analog)
59	PCO	O (3)	Phase comparison output for the recording/playback EFM master PLL
60	FILI	I (A)	Filter input for the recording/playback EFM master PLL
61	FILO	O (A)	Filter output for the recording/playback EFM master PLL
62	CLTV	I (A)	Internal VCO control voltage input for the recording/playback EFM master PLL
63	PEAK	I (A)	Light amount signal peak hold input from the CXA2523AR
64	BOTM	I (A)	Light amount signal bottom hold input from the CXA2523AR
65	ABCD	I (A)	Light amount signal input from the CXA2523AR
66	FE	I (A)	Focus error signal input from the CXA2523AR
67	AUX1	I (A)	Auxiliary A/D input
68	VC	I (A)	Middle point voltage (+1.5V) input from the CXA2523AR
69	ADIO	O (A)	Monitor output of the A/D converter input signal (Not used)
70	AVDD	—	+3V power supply (Analog)
71	ADRT	I (A)	A/D converter operational range upper limit voltage input (Fixed at “H”)
72	ADRB	I (A)	A/D converter operational range lower limit voltage input (Fixed at “L”)
73	AVSS	—	Ground (Analog)
74	SE	I (A)	Sled error signal input from the CXA2523AR
75	TE	I (A)	Tracking error signal input from the CXA2523AR
76	DCHG	I (A)	Connected to +3V power supply
77	APC	I (A)	Error signal input for the laser digital APC (Fixed at “L”)
78	ADFG	I (S)	ADIP duplex FM signal input from the CXA2523AR (22.05 ± 1 kHz)
79	F0CNT	O	Filter f_0 control output to the CXA2523AR
80	XLRF	O	Control latch output to the CXA2523AR
81	CKRF	O	Control clock output to the CXA2523AR
82	DTRF	O	Control data output to the CXA2523AR
83	APCREF	O	Reference PWM output for the laser APC
84	TEST0	O	PWM output for the laser digital APC (Not used)
85	TRDR	O	Tracking servo drive PWM output (–)
86	TFDR	O	Tracking servo drive PWM output (+)
87	DVDD	—	+3V power supply (Digital)
88	FFDR	O	Focus servo drive PWM output (+)
89	FRDR	O	Focus servo drive PWM output (–)
90	FS4	O	176.4 kHz clock signal output (X’tal) (Not used)
91	SRDR	O	Sled servo drive PWM output (–)
92	SFDR	O	Sled servo drive PWM output (+)
93	SPRD	O	Spindle servo drive PWM output (–)
94	SPFD	O	Spindle servo drive PWM output (+)
95	FGIN	I (S)	Test input (Fixed at “L”)
96 to 98	TEST1 to TEST3	I	
99	DVSS	—	Ground (Digital)
100	EFMO	O	EFM output when recording

- Abbreviation
  EFM: Eight to Fourteen Modulation
  PLL : Phase Locked Loop
  VCO: Voltage Controlled Oscillator

• IC1001 M30805SGP SYSTEM CONTROL (DIGITAL BOARD)

Pin No.	Pin Name	I/O	Function
1	————	—	Not used.
2	————	—	Not used.
3	LVLI	—	Not used.
4	LVLO	—	Not used.
5	(TXD3)	—	Not used.
6	(RXD3)	—	Not used.
7	(CLK3)	—	Not used.
8	MUTE	O	Line out muting output. L: Mute
9	DARST	O	Reset signal output to the D/A converter. L: Active
10	SLICERSEL	O	IEC958 input select signal output to the D/A converter. L: CD H: MD
11	LD-LOW	O	Loading motor voltage control output L: High voltage H: Low voltage
12	LDIN	I	Loading motor control input. H: IN
13	LDOUT	O	Loading motor control output. H: OUT
14	MOD	O	Laser modulation switching signal output. L: OFF H: ON
15	BYTE	I	Data bus changed input. (Connected to ground.)
16	CNVSS	—	Ground.
17	X-CIN	I	Sub clock input. (32.768kHz) (Not used.)
18	X-COUT	O	Sub clock output. (32.768kHz) (Not used.)
19	$\overline{\text{RESET}}$	I	System rest input. L : ON
20	XOUT	O	Main clock output. (10MHz)
21	VSS0	—	Ground.
22	XIN	I	Main clock input. (10MHz)
23	VCC0	—	Power supply. (+3.3V)
24	$\overline{\text{NMI}}$	I	Fixed at H. (Pull-up)
25	DQSY	I	Digital in sync input. (Record system)
26	P.DOWN	I	Power down detection input. L: Power down
27	SQSY	I	ADIP (MO) sync or subcode Q (PIT) sync input from CXD2662R.(Playback system)
28	NC	—	Not used.
29	LDON	O	Laser ON/OFF control output. H: Laser ON
30	LIMIT-IN	I	Detection input from the limit switch. L: Sled limit-In H: Sled limit-Out
31	C2-PWM-B	—	Not used.
32	XINIT	I	Interrupt status input from CXD2662R.
33	————	—	Not used.
34	XELT	I	XELT input from DSP IC.
35	WR PWR	O	Write power ON/OFF output. L: OFF H: ON
36	IIC CLK	I/O	IIC serial clock input/output.
37	IIC DATA	I/O	IIC serial data input/output.
38	SWDT	O	Writing data signal output to the serial bus.
39	VCC1	—	Power supply. (+3.3V)
40	SRDT	I	Reading data signal input from the serial bus.
41	VSS1	—	Ground.
42	SCLK	O	Clock signal output to the serial bus.
43	REC-SW	I	Detection signal input from the recording position detection switch. L: REC
44	CLIP DTO	O	CLIP serial data output.
45	CLIPDTI	I	CLIP serial data input. (Not used.)
46	CLIP CLK	O	CLIP serial clock output. (Not used.)
47	DIG-RST	O	Digital rest signal output to the CXD2662R and motor driver. L: Reset
48	SENS	I	Internal status (SENSE) input from the CXD2662R.
49	PLAY-SW	I	Detection signal input from the playback position detection switch. L: PLAY
50	XLAT	O	Latch signal output to DSP IC.
51	OUT-SW	I	Detection signal input from the loading out detection switch.
52	————	—	Not used.

Pin No.	Pin Name	I/O	Function
53	———	—	Not used.
54	———	—	Not used.
55	———	O	Not used.
56	MNT2 (XBUSY)	I	In the state of executive command from the CXD2662R
57	VSS2	—	Ground.
58	MNT1 (SHCK)	I	Track jump signal input from the CXD2662R
59	VCC2	—	Power supply. (+3.3V)
60	EEP-WP	O	EEP-ROM write protect signal output. L: write possibility
61	SDA (EEP)	I/O	Data signal input/output pin with the EEP-ROM.
62	BCLK/ALE/CLKO	—	Not used.
63	$\overline{\text{RD}}$/$\overline{\text{DW}}$	O	Read signal output.
64	$\overline{\text{BHE}}$/$\overline{\text{CASH}}$	—	Not used.
65	$\overline{\text{WR}}$/$\overline{\text{CASL}}$	O	Write signal output.
66	SCL	O	Clock signal output to the EEP-ROM.
67	REFLECT	I	Disk reflection rate detection input from the reflect detection switch. H: Disk with low reflection rate
68	PROTECT	I	Recording-protection claw detection input from the protection detection switch. H: Protect
69	$\overline{\text{CS0}}$	O	Chip select signal output to the Flash ROM.
70	$\overline{\text{CS1}}$	O	Not used.
71	———	O	Not used.
72	A20	O	Address bus signal output to Flash ROM.
73	A19	O	Address bus signal output to Flash ROM.
74	VCC3	—	Power supply. (+3.3V)
75	A18	O	Address bus signal output to Flash ROM.
76	VSS3	—	Ground
77 to 85	A17 to A9	O	Address bus signal output to Flash ROM.
86 to 89	SEL 3 to 0	O	Not used.
90	WP	O	Write protect signal to the Flash ROM.
91	VCC4	—	Power supply. (+3.3V)
92	A8	O	Address bus signal output to Flash ROM.
93	VSS4	—	Ground.
94 to 100	A7 to A1	O	Address bus signal output to Flash ROM.
101	$\overline{\text{LB}}$	—	Not used.
102 to 113	D15 to D4	I/O	Data bus signal input/output to the Flash ROM.
114	CLIP-SEL	O	Not used.
115	IIC BUSY	O	IIC cable connect check. L: Active
116	DALOCK	I	LOCK signal input from D/A converter.
117	LINE-MUTE	O	Not used.
118	ADP DOWN	O	Reset signal output to the A/D converter.
119 to 122	D3 to D0	I/O	Data bus signal input/output to the Flash ROM.
123	SPDIF-CUT	I	Jog dial pulse input from the rotary encoder. (Not used.)
124	OPT SEL	O	Optical select signal output.
125 to 129	———	—	Not used.
130	VSS5	—	Ground.
131	———	O	Not used.
132	VCC5	—	Power supply. (+3.3V)
133	OP-LEVEL	I	Optical Pick-up voltage (current) detect signal input.
134 to 139	———	—	Not used.
140	AVSS	—	Ground. (Analog)
141	———	—	Not used.
142	VREF	—	Power supply. (+3.3V)
143	AVCC	—	Power supply. (+3.3V)
144	NC	I	Not used.

• IC401 M30620MCA-A55FP MASTER CONTROL (MAIN BOARD)

Pin No.	Pin Name	I/O	Descriptions
1	BD-DATA	O	CD data output.
2	BD-CLK	O	CD clock output.
3	BD-LAT	O	CD latch signal output.
4	AC-CUT	I	AC cut input. L= ON,H=OFF
5	N.C	—	Not used.
6	SQ-DATA-IN	I	Subcode Q data input.
7	SQ-CLK	I	Subcode Q data input.
8	GND	—	Connected to ground.
9	GND	—	Connected to ground.
10	XC IN	I	SUB CLOCK input. (32.768kHz)
11	XC OUT	O	SUB CLOCK output. (32.768kHz)
12	RESET	I	System reset input.
13	X-OUT	O	MAIN SYSTEM CLOCK output. (16MHz)
14	VSS	—	Vss
15	X-IN	I	MAIN SYSTEM CLOCK input. (16MHz)
16	VCC	—	Power supply. (+5V)
17	NMI	I	PULL UP (EVER +5V)
18	$\overline{\text{WAKE\_UP}}$	I	WAKE UP signal input. (L)
19	SCOR	I	CD Q-data request signal input.
20	RDS-INT	I	RDS interrupt signal input.
21	RDS-DATA	I	RDS data signal input.
22	$\overline{\text{CD-POWER}}$	O	CD-POWER ON/OFF signal output. H=ON, L=OFF
23	STBY-RELAY	O	STANDBY relay control signal output.
24	$\overline{\text{PROTECT}}$	I	Speaker protect signal input. L=ON, H=OFF
25	STK-MUTE	O	Power amplifier mute ON/OFF signal output. H=ON, L=OFF
26	RWLAY-H	O	Speaker terminal relay control signal output. H=ON, L=OFF
27	N.C	I	Not used.
28	REAR-RELAY	O	Rear speaker relay control signal output.(Not used.)
29	IIC_CLK	O	IIC SCL output.
30	IIC_DATA	O	IIC SDA output.
31	TXD1 (LD ON)	O	Write data output for FLASH connector/LD ON signal output.
32	SQ-DATA (X1-X2)	O	Read data output for FLASH connector/X’tal select signal output.
33	SQ-CLK (DA-MUTE)	O	Clock data output for FLASH connector/D/A converter mute signal output.
34	RST1 (OPT SEL)	O	Reset output for FLASH connector/Optical select signal output.
35	HEAD PHONE	I	Head phone signal detect. H=ON,L=OFF
36	LINE-MUTE	O	Line mute signal output. L=ON, H=OFF
37	MD/P-DOWN	O	MDM power down
38	TEST	I	Test terminal
39	CLOCK-OUT	I	Clock check signal input. (Not used.)
40	PL-LAT	O	Latch output to PRO-LOGIC IC
41	PL-CLK/SUR1	O	Clock output to PRO-LOGIC IC/Surround control signal output
42	PL-DATA/SUR2	O	Data output to PRO-LOGIC IC/Surround control signal output
43	502-LAT	O	Latch output to sound processor

Pin No.	Pin Name	I/O	Descriptions
44	502-DATA	O	Data output to sound processor
45	502-CLK	O	Clock output to sound processor
46	ST-CLK	O	TUNER clock signal output.
47	ST-DIN	I	TUNER data input.
48	ST-DOUT	O	TUNER data output.
49	ST-CE	O	TUNER chip eneble output.
50	TUNED	I	TUNED detect signal input. L=ON, H=OFF
51	STEREO	I	STEREO detect signal input. L=ON, H=OF
52	ST-MUTE	O	Tuner mute signal output.
53	AMS-IN	I	AMS signal input. L=ON,H=OFF”
54	TC-MUTE	O	Tape deck line mute ON/OFF signal output. H=ON, L=OFF
55	$\overline{\text{R}}$/PB/PAS	I	REC/PB/PASS select signal input.
56	NR-ON/$\overline{\text{OFF}}$	O	DOLBY NR ON/OFF signal output. H=ON, L=OFF
57	$\overline{\text{REC-MUTE}}$	O	REC mute ON/OFF signal output. L=ON, H=OFF
58	BAIS	O	BIAS ON/OFF signal output.H=ON, L=OFF
59	EQ-H/$\overline{\text{N}}$	O	EQ High/Normal select signal output. H=High, L=Normal
60	PB-$\overline{\text{A}}$/B	O	Playback deckA/B select signal output. H=deckB, L=deckA
61	$\overline{\text{ALC}}$	O	ALC ON/OFF signal output. L=ON, H=OFF
62	VCC	—	Power Supply (+5V)
63	TC-RELAY	O	Tape deck relay ON/OFF signal output. H=ON, L=OFF
64	VSS	—	Ground.
65	A TRIG	O	A deck trigger control signal output.H=ON, L-OFF
66	B TRIG	O	B deck trigger control signal output.H=ON, L-OFF
67	CAPM-H/L	O	Capstan motor High/Low speed control signal output.
68	CAPM-CONT	O	Capstan motor REV/FWD/STOP control signal output.H=REV, L=FWD/STOP
69	A HALF	I	A deck half detect signal input.
70	A PLAY	I	A deck play detect signal input.
71	B PLAY	I	B deck play detect signal input.
72	IIC-BUSY	I	IIC_BUSY(Not used.)
73	LOD-POS	O	CD loading motor control signal output
74	LOD-NEG	O	CD loading motor control signal output
75	OUT SW	I	Detection input from the tray open/close detect switch (S708) on the CD mechanism block
76	MIDOUT SW	I	Detection input from the mid out detect switch (S701) on the CD mechanism block
77	IN SW	I	Detection input from the tray open/close detect switch (S704) on the CD mechanism block
78	MIDIN SW	I	Detection input from the mid in detect switch (S703) on the CD mechanism block
79	CLP-POS	O	CD elevator up/down motor (M701) control signal output to the motor driver IC (IC701)
80	CLP-NEG	O	CD elevator up/down motor (M701) control signal output to the motor driver IC (IC701)
81	INIT SW	I	Detection input from the INIT detection switch (S705) on the CD mechanism block
82	CNT-SW	I	Detection input from the count detect switch (S706) on the CD mechanism block
83 to 85	ENC2, ENC1, ENC0	I	Detection input from the disc tray address detect rotary encoder (S707) on the CD mechanism block
86	DISC-SENS	I	Detection input from the disc in detect sensor (D704 and Q703) on the CD mechanism block
87	PRTC SW	I	Detection input from the CD tray door open/close detect switch (S702)
88	SOFT-TEST	—	Not used.

Pin No.	Pin Name	I/O	Descriptions
89	A SHUT	O	A deck reel pulse detect signal output.
90	B SHUT	O	B deck reel pulse detect signal output.
91	B HALF/REC A/REC B	I	B deck half detect signal input./A deck or B deck record detect signal input.
92	MODEL-IN	I	MODEL input.
93	SPEC-IN	I	Version select signal input.
94	POWER	O	POWER ON/OFF signal output. H=ON, L=OFF
95	SENS	I	BD condition signal input.
96	AVSS	—	Analog ground.
97	HOLD	I	MODE signal input.
98	VREF	—	Analog Reference Voltage
99	AVCC	—	Analog Power Supply
100	XRST	O	CD reset signal output.

• IC701 TMP88CS77AF-1A90 SYSTEM CONTROL (PANEL BOARD)

Pin No.	Pin Name	I/O	Descriptions
1	LED SEL	O	LED select signal output
2 to 12	LED0 to LED10	O	LED driver output
13	STANDBY LED	O	STANDBY LED driver output
14	TIMER LED	O	TIMER SEL LED driver output
15, 16	VOLUME A, B	I	Rotary encoder pulse input
17 to 22	BPF1 to BPF5	I	Rec level signal input
23	L+R	I	Rec level signal input for feedback
24 to 26	KEY 0 to KEY2	I	Key input
27	STICK 1	I	STICK CONTROL Up / Down
28	STICK 2	I	STICK CONTROL Right / Left
29	VSS	—	Ground
30	VASS	—	Ground
31	VAREF	—	Analog reference voltage
32	VDD	—	Power supply
33	GRID EXT CLK	O	Clock output for GRID EXTENDER
34	2G	O	FL gride signal output
35	1G	O	FL gride signal output
36 to 50	P35 to P49	O	FL segment signal output
51	VDD	—	Power supply
52	GRID EXT RESET	O	Reset output for GRID EXTENDER
53 to 86	P34 to P1	O	FL segment signal output
87	VKK	—	Power supply for FL segment signal output
88	VDD	—	Power supply
89	X IN	I	X’tal(12.5MHz) input
90	VSS	—	Ground
91	X OUT	O	X’tal(12.5MHz) output
92	RESET	I	RESET signal input
93	LED11	O	LED driver output
94	LED12	O	LED driver output(Not used)
95	TEST	I	Connected to ground
96	WAKE UP	O	WAKE-UP signal output
97	I2C data	O	IIC serial data output
98	I2C clk	O	IIC serial clock output
99	LED13	O	LED driver output
100	SIRCS	I	Remote commander input

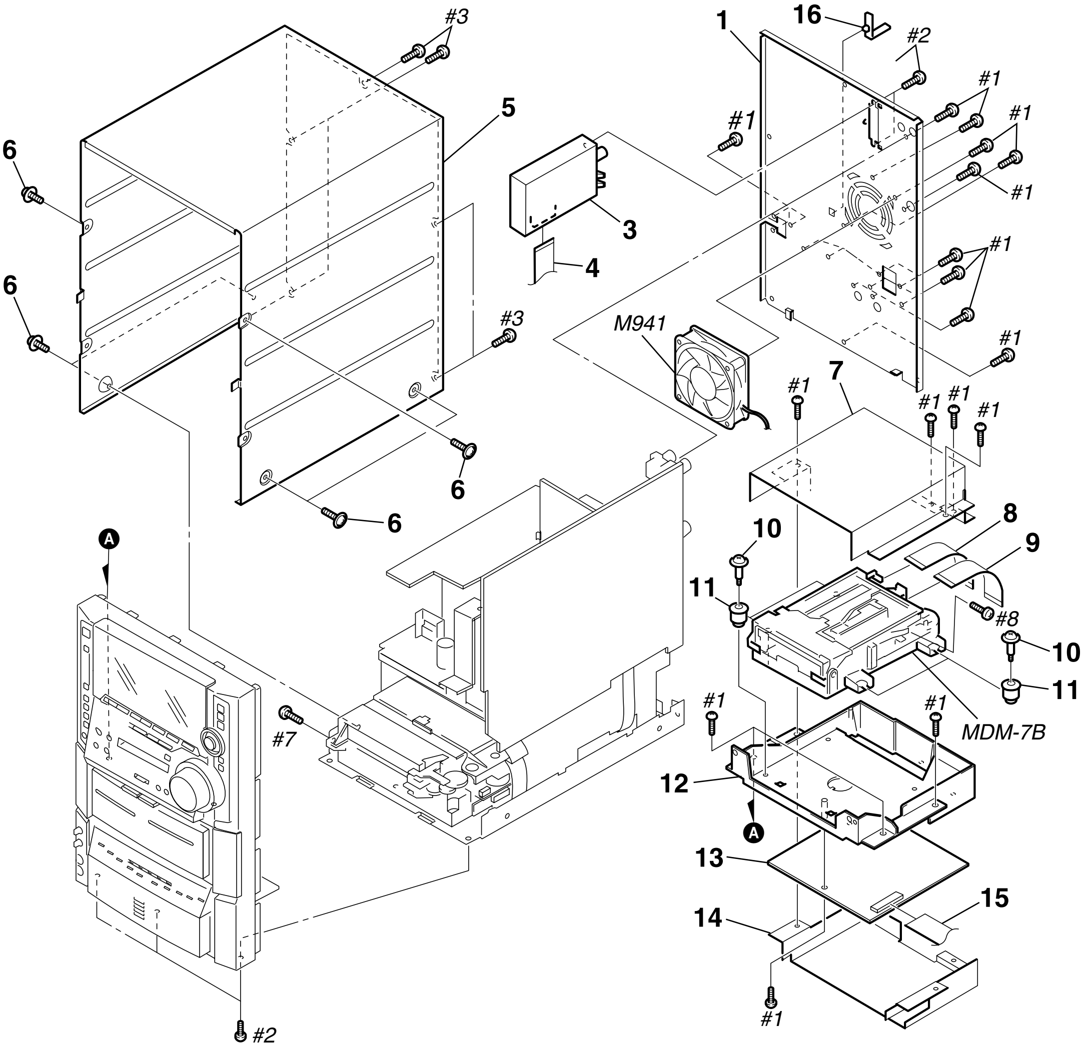
SECTION 8
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

- Abbreviation
  HK : Hong Kong model
  MY : Malaysia model
  SP : Singapore model
  JE : Tourist model

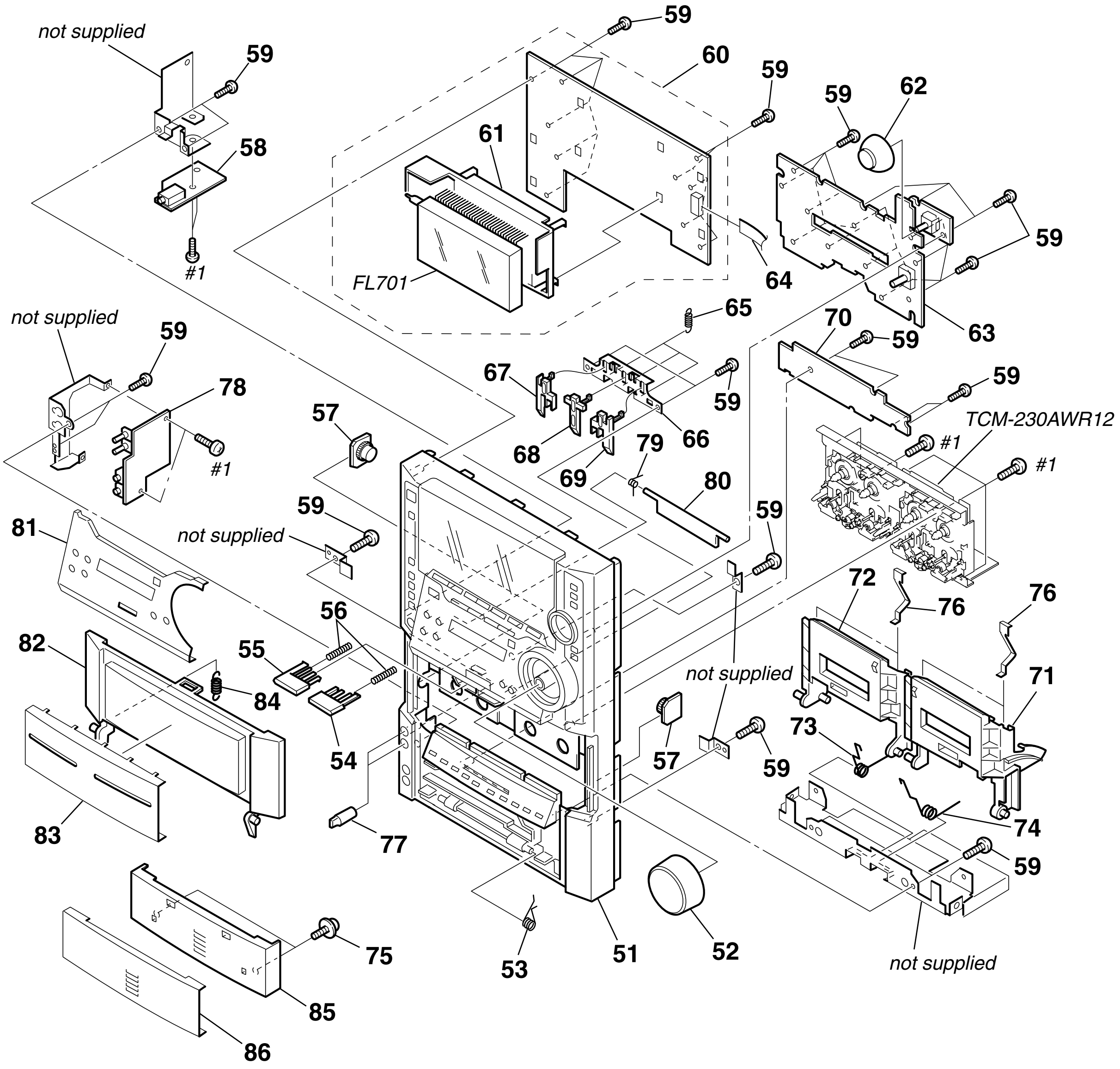
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

8-1. BACK PANEL SECTION



Ref. No.	Part No.	Description	Remarks
1	4-227-557-01	PANEL, BACK (SP,MY)	
1	4-227-557-11	PANEL, BACK (HK)	
1	4-227-557-21	PANEL, BACK (JE)	
3	1-693-482-41	TUNER (FM/AM)(HK,SP,MY)	
3	1-693-508-41	TUNER (FM/AM)(JE)	
4	1-769-972-11	WIRE (FLAT TYPE)(13 CORE)	
5	4-226-746-01	CASE	
6	3-363-099-21	SCREW (CASE 3 TP2)	
7	4-228-556-01	PLATE (B), SHIELD	
8	1-775-151-11	WIRE (FLAT TYPE)(17 CORE)	
9	1-775-236-11	WIRE (FLAT TYPE)(27 CORE)	
10	4-228-684-11	SCREW (+BVTPWH M3), STEP	
11	4-228-689-01	INSULATOR	
12	4-228-332-01	HOLDER (MD)	
13	A-4473-391-A	DIGITAL BOARD, COMPLETE	
14	4-228-555-01	SHIELD (U)	
15	1-773-217-11	WIRE (FLAT TYPE)(25 CORE)	
16	4-956-370-12	BAND, PLUG FIXED (HK)	
M941	1-763-072-11	FAN, DC	

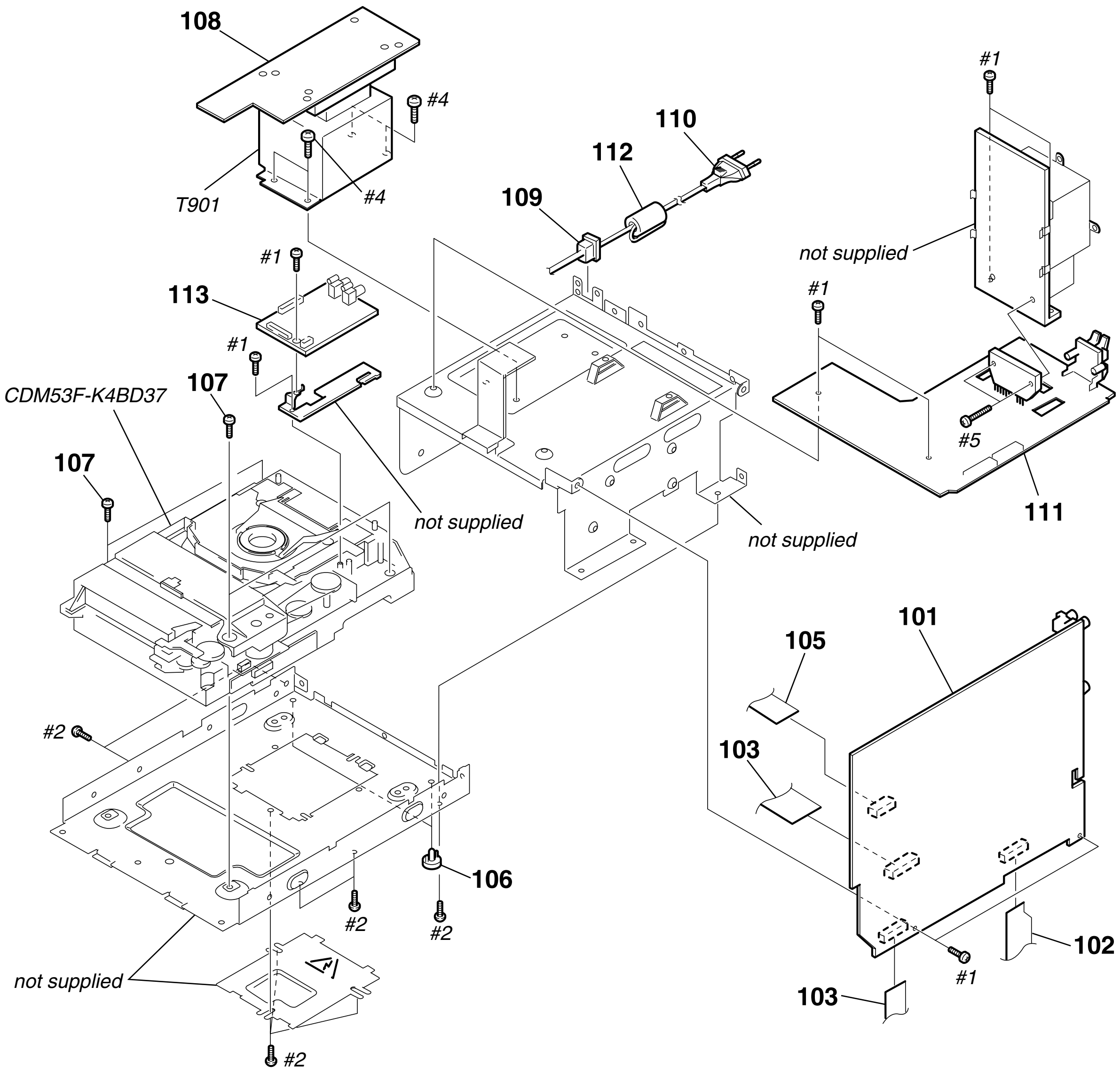
8-2. FRONT PANEL SECTION



not supplied
59
58
#1
59
60
61
FL701
59
59
62
59
64
63
not supplied
59
78
#1
65
70
59
59
67
59
57
68
66
79
69
80
TCM-230AWR12
#1
#1
59
81
not supplied
59
82
56
55
84
54
72
76
76
71
not supplied
57
73
59
74
59
83
77
75
53
51
52
not supplied
85
86

Ref. No.	Part No.	Description	Remarks
51	X-4953-111-1	PANEL ASSY, FRONT	
52	4-226-715-01	KNOB, VOLUEME	
53	4-226-897-01	SPRING (CD)	
54	4-226-735-01	BUTTON (B), EJECT	
55	4-226-734-01	BUTTON (A), EJECT	
56	4-226-537-01	SPRING (TC EJECT), COIL	
57	4-224-104-11	DAMPER	
58	1-676-971-11	HP BOARD	
59	4-951-620-01	SCREW (2.6X8), +BVTP	
60	A-4475-161-A	PANEL BOARD, COMPLETE	
61	4-226-723-01	HOLDER (FL)	
62	4-226-713-01	CURSOR	
63	A-4473-383-A	SUB PANEL BOARD, COMPLETE	
64	1-769-938-11	WIRE (FLAT TYPE)(11 CORE)	
65	4-227-544-01	SPRING, TENSION	
66	4-226-755-01	COVER, LOCK	
67	4-226-733-01	LOCK (B)	
68	4-226-731-01	LOCK (LID)	
69	4-226-732-01	LOCK (A)	
70	A-4428-661-A	CD SW BOARD, COMPLETE	
71	X-4952-712-1	HOLDER (B) ASSY, TC	
72	X-4952-711-1	HOLDER (A) ASSY, TC	
73	4-227-458-01	SPRING (TC A)	
74	4-227-459-01	SPRING (TC B)	
75	4-957-577-01	SCREW PTP WH (2.6X8) (DIA. 10)	
76	4-959-229-11	DETENT, CASSETTE	
77	4-214-385-91	KNOB (MIC)	
78	1-676-972-11	MIC BOARD	
79	4-231-388-01	SPRING (MD)	
80	4-228-335-01	LID (MD)	
81	4-226-712-61	PANEL (STR), ALUMINUM	
82	4-226-729-01	LID,TC	
83	4-226-728-01	PANEL (TC), ALUMINUM	
84	4-227-460-01	SPRING, TENSION	
85	4-226-737-01	LID (CD)	
86	4-226-741-01	PANEL (CD), ALUMINUM	
FL701	1-517-984-11	INDICATOR TUBE, FLUORESCENT	

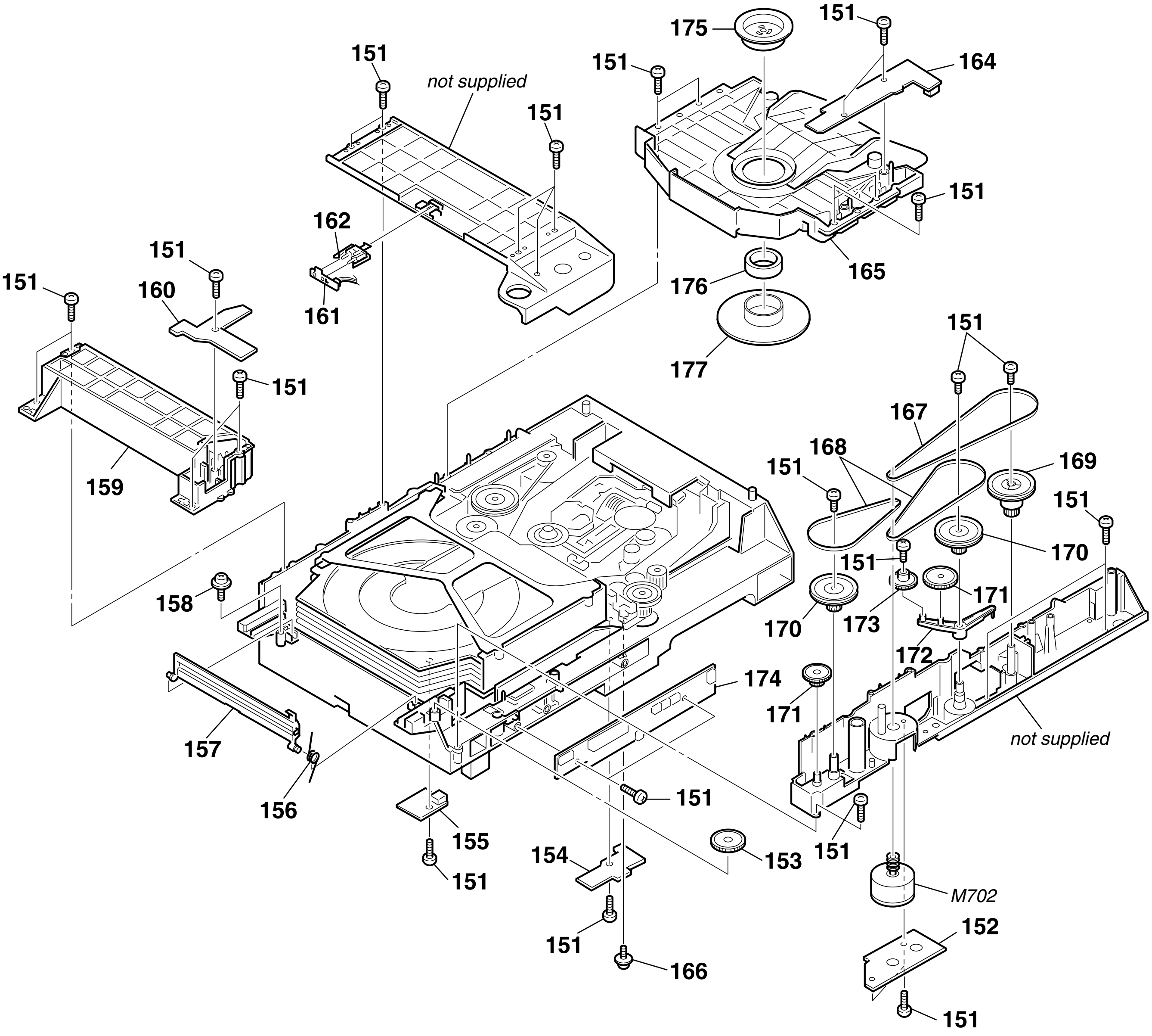
8-3. CHASSIS SECTION


108
#4
#4
T901
#1
113
#1
CDM53F-K4BD37
107
107
not supplied
#2
not supplied
#2
#2
106
#2
110
112
109
#1
not supplied
#1
#5
111
not supplied
101
105
103
102
#1
103

Ref. No.	Part No.	Description	Remarks
101	A-4475-164-A	MAIN BOARD, COMPLETE (HK,SP,MY)	
101	A-4475-214-A	MAIN BOARD, COMPLETE (JE)	
102	1-757-088-11	WIRE (FLAT TYPE)(15 CORE)	
103	1-773-042-11	WIRE (FLAT TYPE)(17 CORE)	
105	1-773-020-11	WIRE (FLAT TYPE)(15 CORE)	
106	4-965-822-01	FOOT	
107	3-970-608-11	SUMITITE (B3), +BV	
108	1-676-975-11	TRANS BOARD	
109	3-703-571-11	BUSHING (S) (4516), CORD (JE)	
* 109	3-703-244-00	BUSHING (2104), CORD (HK,SP,MY)	
⚠110	1-777-071-51	CORD, POWER (HK,SP,MY)	
⚠110	1-791-901-11	CORD, POWER (JE)	
111	A-4475-598-A	FRONT AMP BOARD, COMPLETE	
112	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
113	A-4725-333-A	VIDEO BOARD, COMPLETE	
⚠T901	1-435-774-11	TRANSFORMER, POWER	

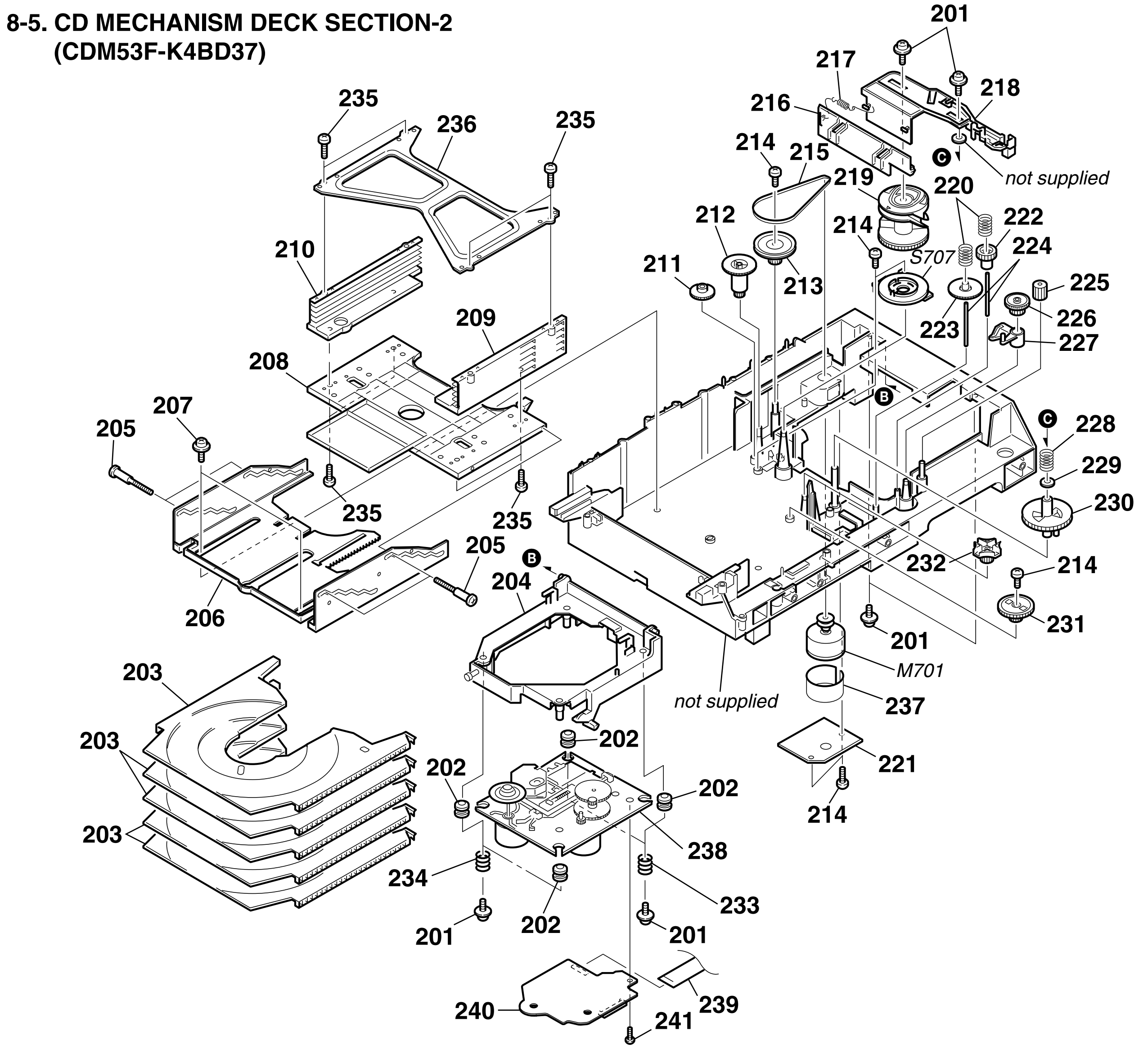
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

8-4. CD MECHANISM DECK SECTION-1
(CDM53F-K4BD37)


175
151
164
151
not supplied
151
151
151
165
162
151
151
160
176
161
177
151
151
159
167
168
169
151
151
158
170
151
170
171
173
172
174
171
157
not supplied
156
151
155
154
153
151
151
M702
152
151
166
151

Ref. No.	Part No.	Description	Remarks
151	4-218-253-11	SCREW (M2.6), +BTTP	
152	1-671-508-11	LOAD MOTOR BOARD	
153	4-211-215-01	GEAR (EJECT)	
154	1-671-502-11	INT/COUNT SW BOARD	
155	1-671-504-11	SENSOR BOARD	
156	4-212-676-01	SPRING (LID), TORSION	
157	4-212-674-01	LID (DISC)	
158	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
159	A-4672-873-A	BASE (GUIDE) ASSY, FITTING	
160	1-671-503-11	OUT SW BOARD	
161	1-671-789-11	SENSOR 2 BOARD	
162	4-964-461-02	HOLDER (SENSOR)	
164	1-671-505-11	IN SW BOARD	
165	A-4672-872-D	BASE (MAGNET) ASSY, FITTING	
166	3-341-549-01	SCREW(2.6X12)(DIA.7.5),+PTP WH	
167	4-211-235-01	BELT (COMMUNICATION)	
168	4-211-236-01	BELT (LOADING)	
169	4-211-231-01	PULLEY (MODE)	
170	4-211-214-01	PULLEY (LD)	
171	4-211-232-01	GEAR (LD DECELERATION)	
172	4-211-228-01	LEVER (GOOSENECK)	
173	4-214-130-01	GEAR (TRAY)	
174	1-671-506-11	CONNECTOR BOARD	
175	4-225-368-01	PULLEY (C), CHUCKING	
176	1-471-061-11	MAGNET ASSY	
177	X-4952-936-1	PULLEY (A) ASSY, CHUCKING	
M702	X-4950-342-1	MOTOR (LOADING) ASSY (CD)	

8-5. CD MECHANISM DECK SECTION-2
(CDM53F-K4BD37)

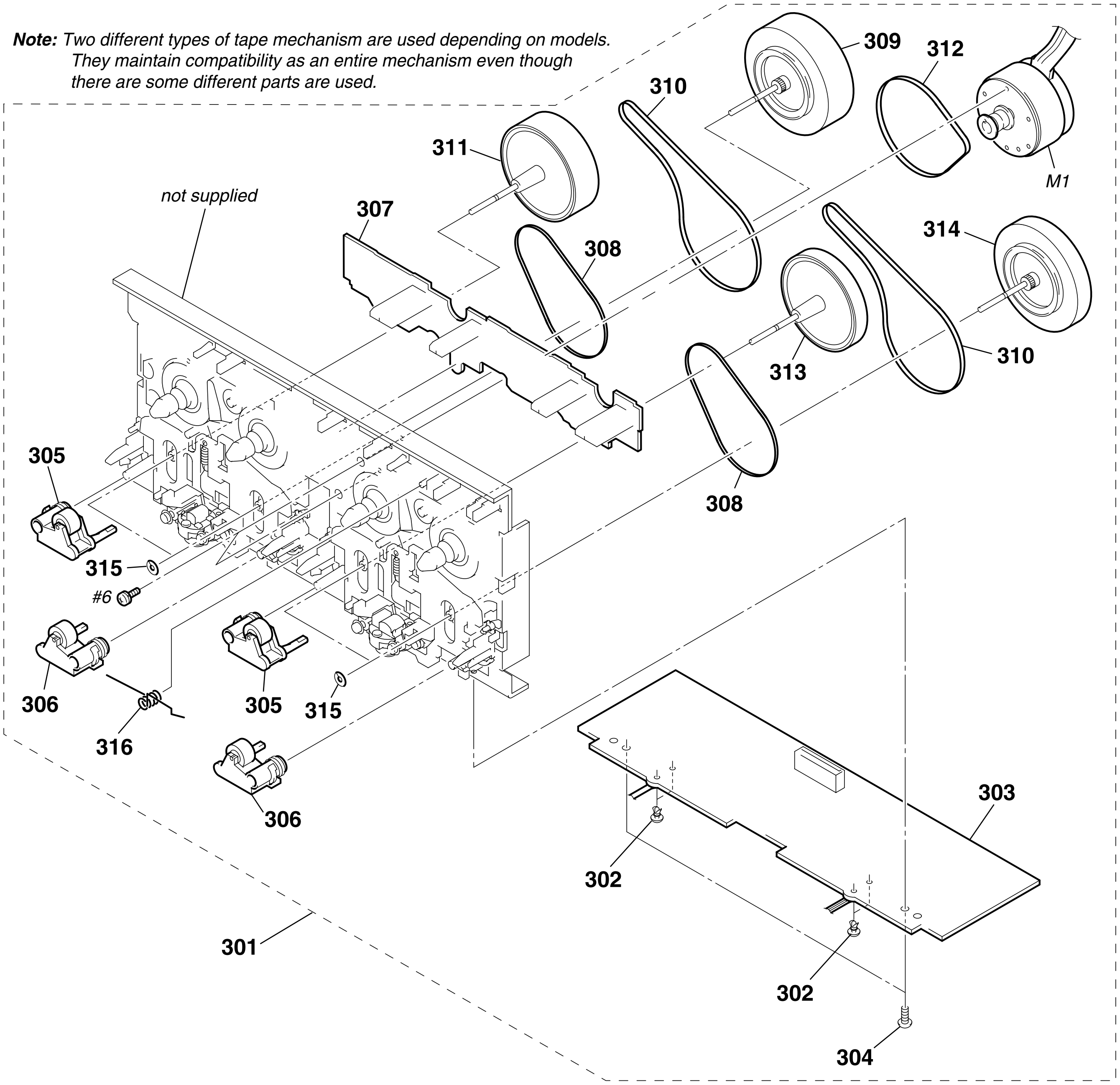

201
217
218
216
214
215
219
C
not supplied
220
222
212
214
S707
224
211
213
225
226
223
227
235
236
235
210
209
208
B
C
228
207
205
229
230
235
235
205
232
214
B
204
206
231
201
M701
203
not supplied
237
203
202
221
202
202
214
238
203
234
233
201
202
201
240
241
239

Ref. No.	Part No.	Description	Remarks
201	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
202	4-220-933-01	INSULATOR	
203	4-211-212-51	TRAY (SUB)	
204	X-4950-322-3	HOLDER (BU) ASSY	
205	4-211-244-01	SCREW, STEP	
206	4-211-223-01	SLIDER (U/D)	
207	4-933-134-01	SCREW (M2.6), +PTPWH	
208	4-221-504-01	BASE (STOCKER), FITTING	
209	4-211-211-01	STOCKER (R)	
210	4-211-210-01	STOCKER (L)	
211	4-211-215-01	GEAR (EJECT)	
212	4-211-232-01	GEAR (MODE DECELERATION)	
213	4-211-214-01	PULLEY (LD)	
214	4-218-253-31	SCREW (M2.6), +BTTP	
215	4-211-237-01	BELT (MODE)	
216	4-212-677-01	SLIDER (SHUTTER)	
217	4-212-678-01	SPRING (SHUTTER), TENSION	
218	4-211-233-01	SLIDER (SELECTION)	
219	4-211-230-01	GEAR (CHUCKING)	
220	4-211-245-01	SPRING, COMPRESSION	
221	1-671-507-11	CLAMP MOTOR BOARD	
222	4-211-221-01	GEAR (LD MOVABLE)	
223	4-211-217-01	GEAR (SELECTION)	
224	4-211-242-11	SHAFT (SELECTION GEAR)	
225	4-211-240-01	GEAR (LD DECELERATION B)	
226	4-211-216-01	GEAR (RELAY)	
227	4-211-241-01	LEVER (SELECTION)	
228	4-216-879-01	SPRING (GEAR), COMPRESSION	
229	3-701-446-21	WASHER	
230	4-211-218-01	GEAR (GEAR A)	
231	4-211-220-01	GEAR (U/D SLIDER)	
232	4-211-219-01	GEAR (GEAR B)	
233	4-222-784-01	SPRING (INSULATOR),COMPRESSION	
234	4-222-785-01	SPRING (INSULATOR),COMPRESSION	
235	4-218-253-21	SCREW (M2.6), +BTTP	
236	4-211-234-01	BRACKET (STOCKER T)	
237	4-228-772-02	PLATE, SHIELD	
⚠238	8-820-122-01	OPTICAL PICK-UP KSM-213DHAP/Z-NP	
239	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
240	A-4724-949-A	BD(CD) BOARD, COMPLETE	
241	4-951-620-01	SCREW (2.6X8), +BVTP	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY	
S707	1-418-045-01	ENCODER, ROTARY (DISC TRAY ADDRESS DET.)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

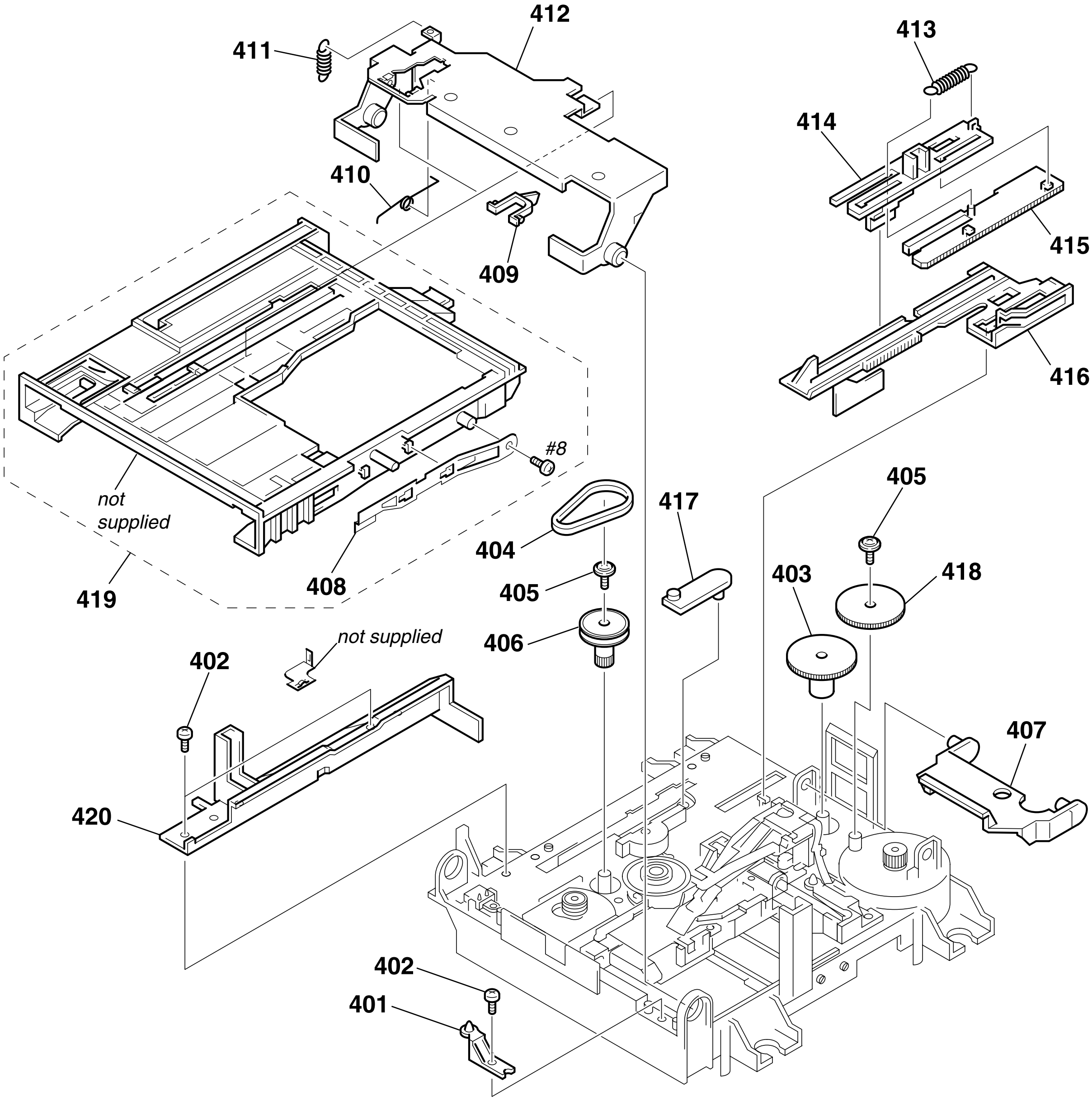
8-6. TAPE MECHANISM DECK SECTION
(TCM-230AWR12)

Note: *Two different types of tape mechanism are used depending on models. They maintain compatibility as an entire mechanism even though there are some different parts are used.*


309
312
310
311
not supplied
307
M1
308
314
313
310
305
308
315
#6
306
305
315
316
306
303
302
301
302
304

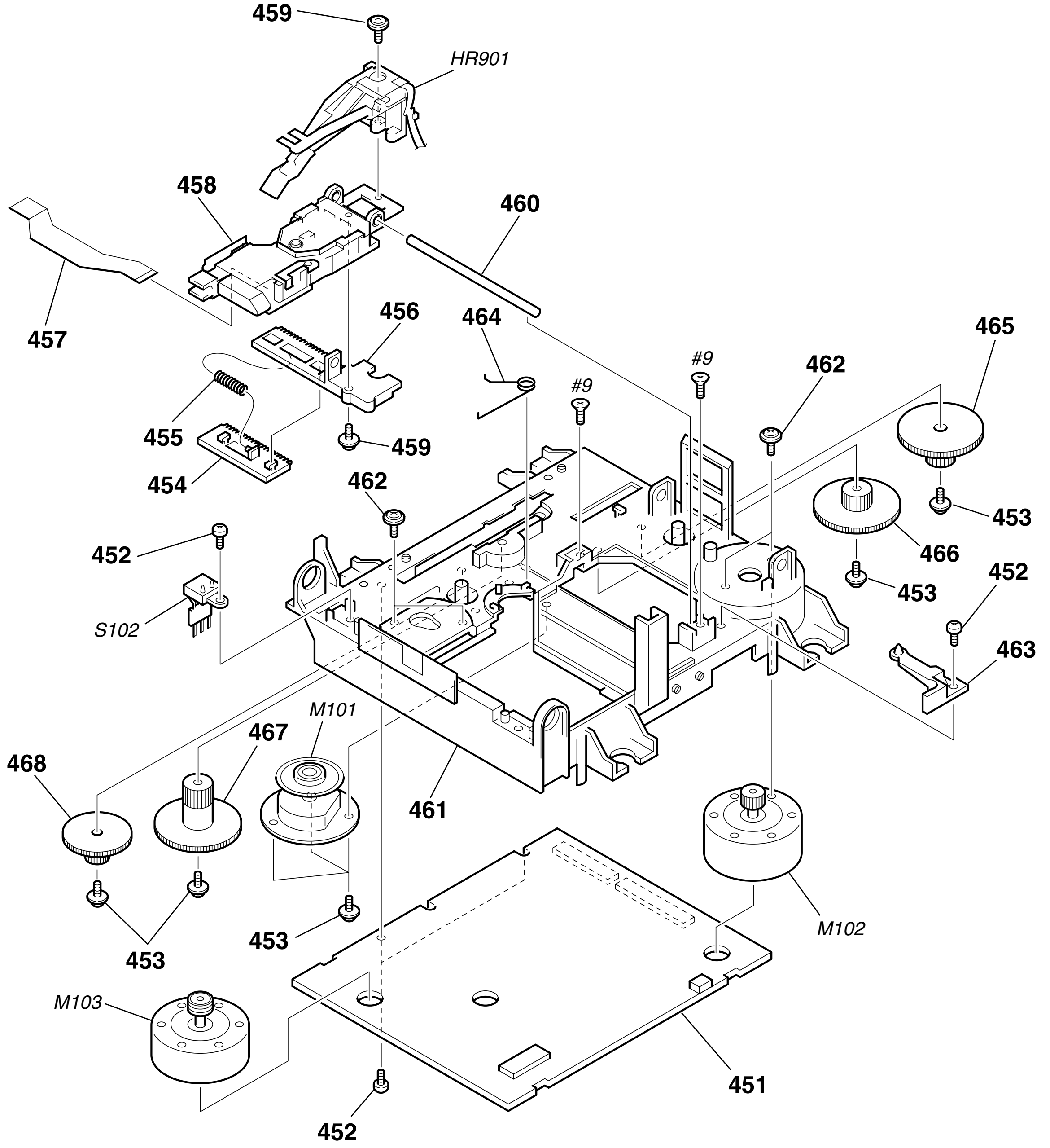
Ref. No.	Part No.	Description	Remarks
301	A-2100-898-A	TAPE MECHANISM ASSY TCM-230AWR12	
302	3-911-116-42	RIVET, PUSH	
303	A-2007-845-A	AUDIO BOARD, COMPLETE	
304	3-376-464-11	SCREW(+PTT 2.6X6),GROUND POINT	
305	X-3374-156-4	PINCH LEVER (REV) ASSY	
306	X-3374-155-4	PINCH LEVER (FWD) ASSY	
307	A-2007-838-A	LEAF SW BOARD, COMPLETE	
308	3-041-947-01	BELT (FR)	
309	X-3378-041-1	FLYWHEEL (A-REV) ASSY	
310	3-041-946-01	BELT (CAPSTAN B)	
311	X-3378-040-1	FLYWHEEL (A-FWD) ASSY	
312	4-227-239-01	BELT (CAPSTAN C)	
313	X-3378-042-1	FLYWHEEL (B-FWD) ASSY	
314	X-3378-043-1	FLYWHEEL (B-REV) ASSY	
315	3-019-208-01	WASHER, STOPPER	
316	4-227-455-02	SPRING (HALF), TORSION	
M1	X-3378-241-1	MOTOR ASSY (CAPSTAN)	

8-7. MD MECHANISM SECTION-1
(MDM-7B)


412
411
413
414
410
409
415
416
#8
not
supplied
419
408
404
417
405
405
403
418
406
not supplied
402
407
420
402
401

Ref. No.	Part No.	Description	Remarks
* 401	4-996-267-01	BASE (BU-D)	
402	4-908-618-21	SCREW (+BTP) (2X6)	
403	4-227-007-01	GEAR (SB)	
404	4-227-025-01	BELT (LOADING)	
405	3-372-761-01	SCREW (M1.7), TAPPING	
406	4-227-002-01	GEAR, PULLEY	
407	4-226-999-01	LEVER (HEAD)	
408	X-4952-665-1	SPRING (SHT) ASSY, LEAF	
409	4-228-923-01	LOCK (HOLDER)	
410	4-229-533-02	SPRING (STOPPER), TORSION	
411	4-227-012-01	SPRING (HOLDER), TENSION	
412	4-227-019-02	PLATE (HOLDER), RETAINER	
413	4-227-013-01	SPRING (EJ), TENSION	
414	4-226-995-01	SLIDER (EJ)	
415	4-226-996-01	LIMITTER (EJ)	
416	4-226-997-01	SLIDER	
417	4-226-998-01	LEVER (CHG)	
418	4-227-006-01	GEAR (SA)	
419	A-4673-973-A	HOLDER ASSY	
420	4-226-994-01	GUIDE (L)	

8-8. MD MECHANISM SECTION-2
(MDM-7B)


459
HR901
458
460
457
456
464
465
#9
462
#9
455
459
454
462
453
452
466
453
452
S102
463
M101
467
468
461
453
453
M102
M103
451
452

Ref. No.	Part No.	Description	Remarks
451	A-4725-101-A	BD (MD) BOARD	
452	4-908-618-21	SCREW (+BTP) (2X6)	
453	3-372-761-01	SCREW (M1.7), TAPPING	
454	4-226-993-01	RACK	
455	4-227-014-01	SPRING (RACK), COMPRESSION	
456	4-226-992-01	BASE, SL	
457	1-678-514-11	FLEXIBLE BOARD	
⚠458	A-4672-541-A	OPTICAL PICK-UP KMS-260B/J1N	
459	4-988-560-01	SCREW (+P 1.7X6)	
460	4-996-265-01	SHAFT, MAIN	
461	4-226-989-01	CHASSIS	
462	4-211-036-01	SCREW (1.7X2.5), +PWH	
463	4-226-990-01	BASE (BU-A)	
464	4-227-023-01	SPRING (SPINDLE), TORSION	
465	4-227-004-01	GEAR (LC)	
466	4-227-005-01	GEAR (LD)	
467	4-227-009-01	GEAR (SD)	
468	4-227-008-01	GEAR (SC)	
HR901	1-500-670-11	HEAD, OVER LIGHT	
M101	A-4672-898-A	MOTOR ASSY, SPINDLE	
M102	A-4672-900-A	MOTOR ASSY, SLED	
M103	A-4672-975-A	MOTOR ASSY, LOADING (MD)	
S102	1-771-957-11	SWITCH, PUSH (2KEY)(REFLECT/PROTECT SW)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 9
ELECTRICAL PARTS LIST

AUDIO

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: μF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- Abbreviation
  HK : Hong Kong model
  MY : Malaysia model
  SP : Singapore model
  JE : Tourist model

Ref. No.	Part No.	Description				Remarks
	A-2007-845-A	AUDIO BOARD, COMPLETE				
		**********************				
		< CAPACITOR >				
C301	1-162-289-31	CERAMIC	390PF	10.00%	50V	
C302	1-126-968-11	ELECT	100uF	20.00%	6.3V	
C303	1-162-282-31	CERAMIC	100PF	10%	50V	
C304	1-130-483-00	MYLAR	0.01uF	5%	50V	
C305	1-128-551-11	ELECT	22uF	20.00%	25V	
C311	1-162-289-31	CERAMIC	390PF	10.00%	50V	
C313	1-162-282-31	CERAMIC	100PF	10%	50V	
C314	1-130-487-00	MYLAR	0.022uF	5%	50V	
C315	1-126-233-11	ELECT	22uF	20%	50V	
C331	1-137-427-11	MYLAR	120PF	5.00%	50V	
C332	1-162-288-31	CERAMIC	330PF	10%	50V	
C333	1-162-209-31	CERAMIC	27PF	5.00%	50V	
C401	1-162-289-31	CERAMIC	390PF	10.00%	50V	
C402	1-126-968-11	ELECT	100uF	20.00%	6.3V	
C403	1-162-282-31	CERAMIC	100PF	10%	50V	
C404	1-130-483-00	MYLAR	0.01uF	5%	50V	
C405	1-128-551-11	ELECT	22uF	20.00%	25V	
C411	1-162-289-31	CERAMIC	390PF	10.00%	50V	
C413	1-162-282-31	CERAMIC	100PF	10%	50V	
C414	1-130-487-00	MYLAR	0.022uF	5%	50V	
C415	1-126-233-11	ELECT	22uF	20%	50V	
C431	1-137-427-11	MYLAR	120PF	5.00%	50V	
C432	1-162-288-31	CERAMIC	330PF	10%	50V	
C433	1-162-209-31	CERAMIC	27PF	5.00%	50V	
C601	1-104-396-11	ELECT	10uF	20.00%	16V	
C602	1-104-396-11	ELECT	10uF	20.00%	16V	
C611	1-104-396-11	ELECT	10uF	20.00%	16V	
C612	1-104-396-11	ELECT	10uF	20.00%	16V	
C621	1-137-150-11	FILM	0.01uF	5.00%	100V	
C622	1-126-961-11	ELECT	2.2uF	20.00%	50V	
C623	1-136-155-00	FILM	0.015uF	5%	50V	
C624	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C625	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C627	1-124-903-11	ELECT	1uF	20.00%	50V	
C628	1-136-153-00	FILM	0.01uF	5%	50V	
C642	1-104-664-11	ELECT	47uF	20.00%	16V	
		< CONNECTOR >				
CN601	1-695-338-11	PIN, CONNECTOR (PC BOARD) 15P				
		< IC >				
IC601	8-759-111-44	IC uPC4570C-1				
IC602	8-759-143-54	IC uPC1330HA				
IC611	8-759-111-44	IC uPC4570C-1				
		< COIL >				
L331	1-410-780-11	INDUCTOR	27mH			
L431	1-410-780-11	INDUCTOR	27mH			
		< TRANSISTOR >				
Q621	8-729-142-46	TRANSISTOR	2SC2001TP-LK			
Q622	8-729-142-46	TRANSISTOR	2SC2001TP-LK			
Q623	8-729-801-93	TRANSISTOR	2SD1387-34-TP			
		< RESISTOR >				
R301	1-247-881-00	CARBON	120K	5%	1/4W	
R302	1-249-409-11	CARBON	220	5%	1/4W	F
R303	1-249-433-11	CARBON	22K	5%	1/4W	
R304	1-247-889-00	CARBON	270K	5%	1/4W	
R305	1-247-858-11	CARBON	13K	5%	1/4W	
R311	1-247-881-00	CARBON	120K	5%	1/4W	
R312	1-247-807-31	CARBON	100	5%	1/4W	
R314	1-247-882-11	CARBON	130K	5%	1/4W	
R315	1-247-850-11	CARBON	6.2K	5%	1/4W	
R331	1-249-430-11	CARBON	12K	5%	1/4W	
R401	1-247-881-00	CARBON	120K	5%	1/4W	
R402	1-249-409-11	CARBON	220	5%	1/4W	F
R403	1-249-433-11	CARBON	22K	5%	1/4W	
R404	1-247-889-00	CARBON	270K	5%	1/4W	
R405	1-247-858-11	CARBON	13K	5%	1/4W	
R411	1-247-881-00	CARBON	120K	5%	1/4W	
R412	1-247-807-31	CARBON	100	5%	1/4W	
R414	1-247-882-11	CARBON	130K	5%	1/4W	
R415	1-247-850-11	CARBON	6.2K	5%	1/4W	
R431	1-249-430-11	CARBON	12K	5%	1/4W	
R601	1-249-409-11	CARBON	220	5%	1/4W	F
R602	1-249-409-11	CARBON	220	5%	1/4W	F
R608	1-249-409-11	CARBON	220	5%	1/4W	F
R609	1-249-433-11	CARBON	22K	5%	1/4W	
R611	1-249-409-11	CARBON	220	5%	1/4W	F
R612	1-249-409-11	CARBON	220	5%	1/4W	F
⚠R621	1-212-851-00	FUSIBLE	5.6	5%	1/4W	
⚠R622	1-212-851-00	FUSIBLE	5.6	5%	1/4W	
R623	1-249-432-11	CARBON	18K	5%	1/4W	
R624	1-249-432-11	CARBON	18K	5%	1/4W	
R625	1-249-429-11	CARBON	10K	5%	1/4W	

Ref. No.	Part No.	Description			Remarks
		< VARIABLE RESISTOR >			
RV301	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV311	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV341	1-241-768-11	RES, ADJ, CARBON 220K			
RV401	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV411	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV441	1-241-768-11	RES, ADJ, CARBON 220K			
		< TRANSFORMER >			
T621	1-423-980-11	TRANSFORMER, BIAS OSCILLATION			
**					
	A-4724-949-A	BD(CD) BOARD, COMPLETE **********************			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C105	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C106	1-164-346-11	CERAMIC CHIP	1uF		16V
C107	1-164-346-11	CERAMIC CHIP	1uF		16V
C108	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C109	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C110	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C111	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C112	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-126-607-11	ELECT CHIP	47uF	20%	4V
C117	1-126-209-11	ELECT CHIP	100uF	20.00%	4V
C118	1-163-275-11	CERAMIC CHIP	0.001uF	5.00%	50V
C119	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
C120	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C121	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C122	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C123	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C124	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C126	1-124-779-00	ELECT CHIP	10uF	20%	16V
C130	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C140	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C152	1-163-237-11	CERAMIC CHIP	27PF	5.00%	50V
C154	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C159	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C161	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C162	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C170	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C171	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C180	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C181	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C182	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C183	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C184	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C185	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C186	1-128-065-11	ELECT CHIP	68uF	20.00%	10V
C187	1-163-038-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
CN101	1-770-708-11	CONNECTOR, FFC/FPC 25P			
CN102	1-777-937-11	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC101	8-752-397-42	IC CXD3008Q			
IC102	8-759-640-22	IC BA5982FM			
IC103	8-752-085-51	IC CXA2568M-T6			
IC104	8-759-325-67	IC TC7SH04F(TE85R)			
		< COIL >			
L101	1-414-234-22	INDUCTOR	0uH		
L102	1-410-377-31	INDUCTOR CHIP	4.7uH		
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR	MSB710-RT1		
Q102	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6		
		< RESISTOR >			
R101	1-216-077-91	RES-CHIP	15K	5%	1/10W
R102	1-216-097-11	RES-CHIP	100K	5%	1/10W
R103	1-216-077-91	RES-CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-073-00	METAL CHIP	10K	5%	1/10W
R106	1-216-049-11	RES-CHIP	1K	5%	1/10W
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R108	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R109	1-216-121-11	RES-CHIP	1M	5%	1/10W
R110	1-216-295-11	SHORT	0		
R112	1-216-025-11	RES-CHIP	100	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-11	RES-CHIP	100K	5%	1/10W
R125	1-216-033-00	METAL CHIP	220	5%	1/10W
R126	1-216-033-00	METAL CHIP	220	5%	1/10W
R127	1-216-033-00	METAL CHIP	220	5%	1/10W
R131	1-216-033-00	METAL CHIP	220	5%	1/10W
R135	1-216-295-11	SHORT	0		
R136	1-216-295-11	SHORT	0		
R137	1-216-295-11	SHORT	0		
R138	1-216-295-11	SHORT	0		
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W
R145	1-216-121-11	RES-CHIP	1M	5%	1/10W
R146	1-216-121-11	RES-CHIP	1M	5%	1/10W
R147	1-216-041-00	METAL CHIP	470	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-003-11	RES-CHIP	12	5%	1/10W
R150	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R154	1-216-025-11	RES-CHIP	100	5%	1/10W
R155	1-216-025-11	RES-CHIP	100	5%	1/10W
R156	1-216-025-11	RES-CHIP	100	5%	1/10W
R157	1-216-025-11	RES-CHIP	100	5%	1/10W
R158	1-216-073-00	METAL CHIP	10K	5%	1/10W
R159	1-216-089-11	RES-CHIP	47K	5%	1/10W
R161	1-216-295-11	SHORT	0		
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W
R171	1-216-025-11	RES-CHIP	100	5%	1/10W
R172	1-216-025-11	RES-CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R173	1-216-025-11	RES-CHIP	100	5%	1/10W
R175	1-216-025-11	RES-CHIP	100	5%	1/10W
R180	1-216-097-11	RES-CHIP	100K	5%	1/10W
R181	1-216-100-00	RES-CHIP	130K	5%	1/10W
R182	1-216-081-00	METAL CHIP	22K	5%	1/10W
R183	1-216-081-00	METAL CHIP	22K	5%	1/10W
R184	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R185	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R186	1-216-081-00	METAL CHIP	22K	5%	1/10W
R187	1-216-081-00	METAL CHIP	22K	5%	1/10W
R188	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R189	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R190	1-216-081-00	METAL CHIP	22K	5%	1/10W
R191	1-216-081-00	METAL CHIP	22K	5%	1/10W
R192	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R193	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R203	1-216-025-11	RES-CHIP	100	5%	1/10W
R204	1-216-025-11	RES-CHIP	100	5%	1/10W
R205	1-216-025-11	RES-CHIP	100	5%	1/10W
R206	1-216-295-11	SHORT	0		
R210	1-216-089-11	RES-CHIP	47K	5%	1/10W
R211	1-216-295-11	SHORT	0		
		< SWITCH >			
S101	1-771-853-11	SWITCH, DETECTION (LIMIT)			

****

Ref. No.	Part No.	Description			Remarks
	A-4725-101-A	BD(MD) BOARD, COMPLETE ***********************			
		< CAPACITOR >			
C101	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C102	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V
C110	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C111	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C112	1-110-563-11	CERAMIC CHIP	0.068uF	10.00%	16V
C113	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C114	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C115	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C116	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C120	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C121	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C125	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C128	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C131	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C141	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C142	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C143	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C145	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C146	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C147	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C151	1-117-370-11	CERAMIC CHIP	10uF		10V
C152	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C153	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C154	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C155	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C156	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C157	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C158	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C160	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C164	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C165	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C166	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C167	1-164-245-11	CERAMIC CHIP	0.015uF	10.00%	25V
C169	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C173	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C174	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C180	1-117-370-11	CERAMIC CHIP	10uF		10V
C181	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C182	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C183	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C184	1-117-970-11	ELECT CHIP	22uF	20.00%	10V
C185	1-131-872-91	CERAMIC CHIP	1000PF	10%	630V
C191	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C192	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C193	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C194	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C195	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C196	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1401	1-117-720-11	CERAMIC CHIP	4.7uF		10V
		< CONNECTOR >			
CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P			
CN102	1-784-835-21	CONNECTOR,FFC (LIF(NON-ZIF))27P			
CN103	1-784-869-21	CONNECTOR,FFC (LIF(NON-ZIF))17P			
* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P			
CN105	1-784-859-21	CONNECTOR, FFC (LIF(NON-ZIF))7P			
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D181	8-719-080-81	DIODE FS1J6			
D183	8-719-080-81	DIODE FS1J6			
		< IC >			
IC101	8-752-080-95	IC CXA2523AR			
IC102	8-759-473-51	IC TLV2361CDBV			
IC141	8-759-430-25	IC BH6511FS-E2			
IC151	8-752-404-64	IC CXD2662R			
IC152	8-759-599-51	IC MSM51V17400D-50TS-K			

BD (MD)

Ref. No.	Part No.	Description			Remarks
IC181	8-759-481-17	IC	MC74ACT08DTR2		
IC190	8-759-677-64	IC	L88M35T		
IC195	8-759-640-41	IC	BR24C08F-E2		
		< JUMPER RESISTOR >			
JW201	1-216-295-11	SHORT	0		
JW202	1-216-295-11	SHORT	0		
JW203	1-216-295-11	SHORT	0		
JW903	1-216-295-11	SHORT	0		
JW904	1-216-295-11	SHORT	0		
		< COIL >			
L101	1-500-245-11	INDUCTOR	0uH		
L102	1-500-245-11	INDUCTOR	0uH		
L103	1-500-245-11	INDUCTOR	0uH		
L105	1-414-235-22	INDUCTOR	0uH		
L106	1-500-245-11	INDUCTOR	0uH		
L121	1-500-245-11	INDUCTOR	0uH		
L122	1-500-245-11	INDUCTOR	0uH		
L131	1-500-245-11	INDUCTOR	0uH		
L141	1-412-029-11	INDUCTOR CHIP	10uH		
L142	1-412-032-11	INDUCTOR CHIP	100uH		
L143	1-412-029-11	INDUCTOR CHIP	10uH		
L144	1-412-032-11	INDUCTOR CHIP	100uH		
L145	1-412-032-11	INDUCTOR CHIP	100uH		
L146	1-469-855-21	FERRITE	0uH		
L147	1-469-855-21	FERRITE	0uH		
L161	1-500-245-11	INDUCTOR	0uH		
L171	1-500-245-11	INDUCTOR	0uH		
L180	1-469-855-21	FERRITE	0uH		
L181	1-469-855-21	FERRITE	0uH		
L182	1-500-245-11	INDUCTOR	0uH		
L183	1-216-296-91	SHORT	0		
L184	1-216-296-91	SHORT	0		
		< TRANSISTOR >			
Q101	8-729-403-35	TRANSISTOR	UN5113-TX		
Q121	8-729-403-35	TRANSISTOR	UN5113-TX		
Q122	8-729-101-07	TRANSISTOR	2SB798-T1DK		
Q131	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q132	8-729-903-10	TRANSISTOR	FMW1-T-148		
Q133	8-729-402-93	TRANSISTOR	UN5214-TX		
Q134	8-729-402-93	TRANSISTOR	UN5214-TX		
Q181	8-729-018-75	TRANSISTOR	2SJ278MYTR		
Q182	8-729-017-65	TRANSISTOR	2SK1764KYTR		
		< RESISTOR >			
R101	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R102	1-216-853-11	METAL CHIP	470K	5%	1/16W
R103	1-216-863-11	RES-CHIP	3.3M	5%	1/16W
R104	1-216-853-11	METAL CHIP	470K	5%	1/16W
R105	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R108	1-216-833-11	METAL CHIP	10K	5%	1/16W
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W
R110	1-216-845-11	METAL CHIP	100K	5%	1/16W
R111	1-216-833-11	METAL CHIP	10K	5%	1/16W
R112	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R115	1-216-833-11	METAL CHIP	10K	5%	1/16W
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W
R117	1-216-837-11	METAL CHIP	22K	5%	1/16W
R118	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R119	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R120	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R121	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R122	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R123	1-216-819-11	METAL CHIP	680	5%	1/16W
R124	1-216-809-11	METAL CHIP	100	5%	1/16W
R125	1-216-815-11	METAL CHIP	330	5%	1/16W
R126	1-216-819-11	METAL CHIP	680	5%	1/16W
R127	1-216-845-11	METAL CHIP	100K	5%	1/16W
R128	1-219-724-11	METAL CHIP	1	1%	1/4W
R129	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R130	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R131	1-216-833-11	METAL CHIP	10K	5%	1/16W
R132	1-216-839-11	METAL CHIP	33K	5%	1/16W
R133	1-216-821-11	METAL CHIP	1K	5%	1/16W
R134	1-216-821-11	METAL CHIP	1K	5%	1/16W
R135	1-216-821-11	METAL CHIP	1K	5%	1/16W
R136	1-216-302-00	METAL CHIP	2.7	5%	1/10W
R138	1-216-833-11	METAL CHIP	10K	5%	1/16W
R150	1-216-833-11	METAL CHIP	10K	5%	1/16W
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W
R153	1-216-833-11	METAL CHIP	10K	5%	1/16W
R155	1-216-864-11	METAL CHIP	0	5%	1/16W
R156	1-216-864-11	METAL CHIP	0	5%	1/16W
R158	1-216-809-11	METAL CHIP	100	5%	1/16W
R162	1-216-833-11	METAL CHIP	10K	5%	1/16W
R167	1-216-833-11	METAL CHIP	10K	5%	1/16W
R168	1-216-845-11	METAL CHIP	100K	5%	1/16W
R169	1-216-855-11	METAL CHIP	680K	5%	1/16W
R170	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R171	1-216-821-11	METAL CHIP	1K	5%	1/16W
R173	1-216-821-11	METAL CHIP	1K	5%	1/16W
R174	1-216-811-11	METAL CHIP	150	5%	1/16W
R177	1-216-805-11	METAL CHIP	47	5%	1/16W
R179	1-216-295-11	SHORT	0		
R181	1-216-841-11	METAL CHIP	47K	5%	1/16W
R182	1-216-841-11	METAL CHIP	47K	5%	1/16W
R183	1-216-841-11	METAL CHIP	47K	5%	1/16W
R184	1-220-942-11	METAL CHIP	3.3	1%	1/4W
R185	1-220-942-11	METAL CHIP	3.3	1%	1/4W
R195	1-216-833-11	METAL CHIP	10K	5%	1/16W
R196	1-216-833-11	METAL CHIP	10K	5%	1/16W
R197	1-216-833-11	METAL CHIP	10K	5%	1/16W
R218	1-216-864-11	METAL CHIP	0	5%	1/16W
		< SWITCH >			
S101	1-762-596-21	SWITCH, PUSH (1 KEY)(LIMIT IN)			
S103	1-771-956-21	SWITCH, PUSH (1 KEY)(OUT)			
S104	1-771-955-21	SWITCH, PUSH (1 KEY)(PLAY)			
S105	1-771-955-21	SWITCH, PUSH (1 KEY)(REC)			

Ref. No.	Part No.	Description			Remarks	
		< VIBRATOR >				
X171	1-781-569-21	OSCILLATOR, CRYSTAL(90MHz)				
**						
	A-4428-661-A	CD SW BOARD, COMPLETE				
		**********************				
		< DIODE >				
D661	8-719-058-64	DIODE SEL5823A-TP15 (DISC 1)				
D662	8-719-058-64	DIODE SEL5823A-TP15 (DISC 2)				
D663	8-719-058-64	DIODE SEL5823A-TP15 (DISC 3)				
D664	8-719-058-64	DIODE SEL5823A-TP15 (DISC 4)				
D665	8-719-058-64	DIODE SEL5823A-TP15 (DISC 5)				
		< RESISTOR >				
R628	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R629	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R630	1-247-843-11	CARBON	3.3K	5%	1/4W	
R631	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R632	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R633	1-249-429-11	CARBON	10K	5%	1/4W	
R634	1-249-431-11	CARBON	15K	5%	1/4W	
R635	1-249-434-11	CARBON	27K	5%	1/4W	
R636	1-249-438-11	CARBON	56K	5%	1/4W	
R661	1-249-409-11	CARBON	220	5%	1/4W	F
R662	1-249-409-11	CARBON	220	5%	1/4W	F
R663	1-249-409-11	CARBON	220	5%	1/4W	F
R664	1-249-409-11	CARBON	220	5%	1/4W	F
R665	1-249-409-11	CARBON	220	5%	1/4W	F
		< SWITCH >				
S627	1-762-875-21	SWITCH, KEYBOARD (⏏ 5)				
S628	1-762-875-21	SWITCH, KEYBOARD (⏏ 4)				
S629	1-762-875-21	SWITCH, KEYBOARD (⏏ 3)				
S630	1-762-875-21	SWITCH, KEYBOARD (⏏ 2)				
S631	1-762-875-21	SWITCH, KEYBOARD (⏏ 1)				
S632	1-762-875-21	SWITCH, KEYBOARD (DISC 5)				
S633	1-762-875-21	SWITCH, KEYBOARD (DISC 4)				
S634	1-762-875-21	SWITCH, KEYBOARD (DISC 3)				
S635	1-762-875-21	SWITCH, KEYBOARD (DISC 2)				
S636	1-762-875-21	SWITCH, KEYBOARD (DISC 1)				
**						
	1-671-507-11	CLAMP MOTOR BOARD				
		******************				
		< CAPACITOR >				
C701	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
C702	1-126-964-11	ELECT	10uF	20.00%	50V	
C711	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
		< CONNECTOR >				
CN712	1-506-469-11	PIN, CONNECTOR 4P				
		< DIODE >				
D701	8-719-983-66	DIODE MTZJ-T-72-3.6B				
		< IC >				
IC701	8-759-633-65	IC M54641L				
		< RESISTOR >				
R701	1-249-411-11	CARBON	330	5%	1/4W	
R702	1-249-401-11	CARBON	47	5%	1/4W	F
**						
	1-671-506-11	CONNECTOR BOARD				
		*****************				
		< CONNECTOR >				
CN701	1-568-860-11	SOCKET, CONNECTOR 17P				
		< TRANSISTOR >				
Q701	8-729-029-66	TRANSISTOR	RT1N141S-TP			
		< RESISTOR >				
R707	1-249-424-11	CARBON	3.9K	5%	1/4W	F
R708	1-249-417-11	CARBON	1K	5%	1/4W	F
R709	1-249-429-11	CARBON	10K	5%	1/4W	
**						
	A-4473-391-A	DIGITAL BOARD, COMPLETE				
		***********************				
		< CAPACITOR >				
C1001	1-126-934-11	ELECT	220uF	20.00%	10V	
C1002	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1003	1-126-933-11	ELECT	100uF	20.00%	16V	
C1004	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1005	1-126-933-11	ELECT	100uF	20.00%	16V	
C1006	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1007	1-126-933-11	ELECT	100uF	20.00%	16V	
C1008	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1009	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1010	1-126-933-11	ELECT	100uF	20.00%	16V	
C1011	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1012	1-126-933-11	ELECT	100uF	20.00%	16V	
C1013	1-126-933-11	ELECT	100uF	20.00%	16V	
C1014	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1015	1-126-933-11	ELECT	100uF	20.00%	16V	
C1016	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1017	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1018	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1019	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C1020	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C1021	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1022	1-126-933-11	ELECT	100uF	20.00%	16V	
C1023	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1024	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1025	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1026	1-126-933-11	ELECT	100uF	20.00%	16V	
C1027	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C1031	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1034	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C1035	1-163-038-11	CERAMIC CHIP	0.1uF		25V	
C1037	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C1038	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C1039	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C1040	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C1041	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	

Ref. No.	Part No.	Description			Remarks
C1044	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1045	1-126-933-11	ELECT	100uF	20.00%	16V
C1046	1-136-153-00	FILM	0.01uF	5%	50V
C1047	1-136-153-00	FILM	0.01uF	5%	50V
C1048	1-126-933-11	ELECT	100uF	20.00%	16V
C1049	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1050	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1052	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN1001	1-784-747-11	CONNECTOR, FFC 25P			
CN1003	1-779-295-11	CONNECTOR,FFC (LIF(NON-ZIF))27P			
CN1004	1-779-285-11	CONNECTOR,FFC (LIF(NON-ZIF))17P			
		< IC >			
IC1001	8-759-698-95	IC M30805SGP			
IC1002	8-759-714-81	IC MT28F800B3WG-10T-SYS70-90			
IC1004	8-759-822-09	IC LB1641			
IC1005	8-759-675-78	IC UDA1360TS			
IC1006	8-759-675-77	IC UDA1350AH			
		< COIL >			
L1001	1-412-533-21	INDUCTOR	47uH		
		< TRANSISTOR >			
Q1001	8-729-402-42	TRANSISTOR	UN5213-TX		
Q1002	8-729-602-36	TRANSISTOR	2SA1602TP-1EF		
Q1004	8-729-403-35	TRANSISTOR	UN5113-TX		
		< RESISTOR >			
R1001	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1002	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1005	1-216-025-11	RES-CHIP	100	5%	1/10W
R1006	1-216-025-11	RES-CHIP	100	5%	1/10W
R1007	1-216-025-11	RES-CHIP	100	5%	1/10W
R1010	1-216-025-11	RES-CHIP	100	5%	1/10W
R1011	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1012	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1013	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1014	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1015	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1016	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1017	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1018	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1024	1-216-041-00	METAL CHIP	470	5%	1/10W
R1033	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R1034	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1035	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1036	1-216-295-11	SHORT	0		
R1039	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1040	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1041	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1042	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1043	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1044	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1045	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1046	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1047	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1048	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1049	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1050	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1051	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1052	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1053	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1054	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1055	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1056	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1057	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1058	1-216-025-11	RES-CHIP	100	5%	1/10W
R1059	1-216-025-11	RES-CHIP	100	5%	1/10W
R1060	1-216-025-11	RES-CHIP	100	5%	1/10W
R1071	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1072	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1073	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1076	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1077	1-216-295-11	SHORT	0		
R1078	1-216-295-11	SHORT	0		
R1080	1-216-295-11	SHORT	0		
R1081	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1082	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1083	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1084	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1087	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1088	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R1090	1-216-041-00	METAL CHIP	470	5%	1/10W
R1091	1-216-033-00	METAL CHIP	220	5%	1/10W
R1092	1-216-033-00	METAL CHIP	220	5%	1/10W
R1093	1-216-033-00	METAL CHIP	220	5%	1/10W
R1094	1-216-033-00	METAL CHIP	220	5%	1/10W
R1095	1-216-039-00	METAL CHIP	390	5%	1/10W
R2002	1-216-296-91	SHORT	0		
R2005	1-216-295-11	SHORT	0		
		< VIBRATOR >			
X1001	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			

****

Ref. No.	Part No.	Description			Remarks
	A-4475-598-A	FRONT AMP BOARD, COMPLETE			
		**************************			
		< CAPACITOR >			
C801	1-126-963-11	ELECT	4.7uF	20.00%	50V
C802	1-162-286-31	CERAMIC	220PF	10%	50V
C803	1-162-282-31	CERAMIC	100PF	10%	50V
C804	1-104-664-11	ELECT	47uF	20.00%	10V
C806	1-136-495-11	FILM	0.068uF	5.00%	50V
C807	1-136-495-11	FILM	0.068uF	5.00%	50V
C811	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C812	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C821	1-107-721-11	ELECT	4.7uF	20.00%	100V
C822	1-107-717-11	ELECT	47uF	20.00%	50V

Ref. No.	Part No.	Description			Remarks
C837	1-126-963-11	ELECT	4.7uF	20.00%	50V
C851	1-126-963-11	ELECT	4.7uF	20.00%	50V
C852	1-162-286-31	CERAMIC	220PF	10%	50V
C853	1-162-282-31	CERAMIC	100PF	10%	50V
C854	1-104-664-11	ELECT	47uF	20.00%	10V
C856	1-136-495-11	FILM	0.068uF	5.00%	50V
C857	1-136-495-11	FILM	0.068uF	5.00%	50V
C861	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C862	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C871	1-107-721-11	ELECT	4.7uF	20.00%	100V
C872	1-126-959-11	ELECT	0.47uF	20.00%	50V
C891	1-104-665-11	ELECT	100uF	20.00%	10V
C892	1-126-961-11	ELECT	2.2uF	20.00%	50V
C893	1-104-665-11	ELECT	100uF	20.00%	10V
C911	1-130-777-00	MYLAR	0.1uF	5.00%	100V
C912	1-130-777-00	MYLAR	0.1uF	5.00%	100V
C951	1-127-754-11	ELECT	3300uF	20%	80V
C952	1-127-754-11	ELECT	3300uF	20%	80V
C953	1-135-515-11	ELECT	3300uF	20%	50V
C954	1-127-751-11	ELECT	3300uF	20%	50V
C955	1-136-165-00	FILM	0.1uF	5.00%	50V
C956	1-136-165-00	FILM	0.1uF	5.00%	50V
C961	1-128-560-11	ELECT	22uF	20.00%	100V
C962	1-128-560-11	ELECT	22uF	20.00%	100V
C963	1-126-968-11	ELECT	100uF	20.00%	50V
C964	1-126-967-11	ELECT	47uF	20.00%	50V
C981	1-128-564-11	ELECT	220uF	20.00%	100V
C982	1-126-964-11	ELECT	10uF	20.00%	50V
C983	1-126-967-11	ELECT	47uF	20.00%	50V
C984	1-164-159-11	CERAMIC	0.1uF		50V
C985	1-104-664-11	ELECT	47uF	20.00%	16V
C991	1-136-165-00	FILM	0.1uF	5.00%	50V
C992	1-136-165-00	FILM	0.1uF	5.00%	50V
C993	1-136-165-00	FILM	0.1uF	5.00%	50V
C994	1-136-165-00	FILM	0.1uF	5.00%	50V
		< CONNECTOR >			
CN801	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			
CN803	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P			
CN804	1-778-982-21	CONNECTOR, BOARD TO BOARD 13P			
		< DIODE >			
D801	8-719-911-19	DIODE 1SS133T-72			
D802	8-719-911-19	DIODE 1SS133T-72			
D821	8-719-911-19	DIODE 1SS133T-72			
D831	8-719-911-19	DIODE 1SS133T-72			
D851	8-719-911-19	DIODE 1SS133T-72			
D871	8-719-911-19	DIODE 1SS133T-72			
D881	8-719-911-19	DIODE 1SS133T-72			
D911	8-719-510-68	DIODE D5SBA204101			
D951	8-719-510-68	DIODE D5SBA204101			
D961	8-719-110-36	DIODE MTZJ-T-72-13C			
D962	8-719-110-36	DIODE MTZJ-T-72-13C			
D963	8-719-911-19	DIODE 1SS133T-72			
D981	8-719-024-99	DIODE 11ES2-NTA2B			
D982	8-719-079-21	DIODE MTZJ-T-72-20D			
D983	8-719-079-21	DIODE MTZJ-T-72-20D			

Ref. No.	Part No.	Description			Remarks	
D984	8-719-160-59	DIODE RD13F-T7B3				
D985	8-719-911-19	DIODE 1SS133T-72				
D986	8-719-911-19	DIODE 1SS133T-72				
D991	8-719-024-99	DIODE 11ES2-NTA2B				
D992	8-719-024-99	DIODE 11ES2-NTA2B				
D993	8-719-024-99	DIODE 11ES2-NTA2B				
D994	8-719-024-99	DIODE 11ES2-NTA2B				
D995	8-719-975-85	DIODE 21DQ04N-TA2				
D996	8-719-975-85	DIODE 21DQ04N-TA2				
D997	8-719-975-85	DIODE 21DQ04N-TA2				
D998	8-719-975-85	DIODE 21DQ04N-TA2				
		< EARTH >				
* EPT951	1-537-738-21	TERMINAL, EARTH				
		< IC >				
IC801	8-749-017-04	IC STK412-030				
		< TRANSISTOR >				
Q801	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q821	8-729-231-55	TRANSISTOR	2SC2878AB-TPE2			
Q822	8-729-900-63	TRANSISTOR	BN1F4M-TP			
Q841	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q842	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q851	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q871	8-729-231-55	TRANSISTOR	2SC2878AB-TPE2			
Q881	8-729-119-76	TRANSISTOR	2SA1175TP-HFE			
Q883	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q891	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q892	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q893	8-729-140-82	TRANSISTOR	2SA988TP-PAFAEA			
Q894	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q895	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q896	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q897	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q961	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q962	8-729-140-82	TRANSISTOR	2SA1376-T-L			
Q963	8-729-140-84	TRANSISTOR	2SC1841TP-PAFAEA			
Q981	8-729-048-52	TRANSISTOR	2SA1932(TP)			
		< RESISTOR >				
R801	1-249-417-11	CARBON	1K	5%	1/4W	F
R802	1-249-438-11	CARBON	56K	5%	1/4W	
R803	1-249-414-11	CARBON	560	5%	1/4W	F
R804	1-249-438-11	CARBON	56K	5%	1/4W	
⚠R805	1-234-499-21	ENCAPSULATED COMPONENT				
R806	1-249-417-11	CARBON	1K	5%	1/4W	F
R807	1-249-431-11	CARBON	15K	5%	1/4W	
R808	1-249-441-11	CARBON	100K	5%	1/4W	
R809	1-260-076-11	CARBON	10	5%	1/2W	
R814	1-249-437-11	CARBON	47K	5%	1/4W	
R815	1-249-437-11	CARBON	47K	5%	1/4W	
R821	1-260-089-11	CARBON	150	5%	1/2W	
R822	1-260-089-11	CARBON	150	5%	1/2W	
R823	1-260-089-11	CARBON	150	5%	1/2W	
R824	1-260-089-11	CARBON	150	5%	1/2W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

FRONT AMP | HP | IN SW | INT/COUNT SW

Ref. No.	Part No.	Description			Remarks	
R825	1-249-402-11	CARBON	56	5%	1/4W	F
R826	1-249-417-11	CARBON	1K	5%	1/4W	F
R827	1-249-433-11	CARBON	22K	5%	1/4W	
R828	1-249-417-11	CARBON	1K	5%	1/4W	F
R829	1-249-437-11	CARBON	47K	5%	1/4W	
R830	1-249-417-11	CARBON	1K	5%	1/4W	F
R841	1-249-441-11	CARBON	100K	5%	1/4W	
R842	1-249-441-11	CARBON	100K	5%	1/4W	
R843	1-249-439-11	CARBON	68K	5%	1/4W	
R851	1-249-417-11	CARBON	1K	5%	1/4W	F
R852	1-249-438-11	CARBON	56K	5%	1/4W	
R853	1-249-414-11	CARBON	560	5%	1/4W	F
R854	1-249-438-11	CARBON	56K	5%	1/4W	
⚠R855	1-234-499-21	ENCAPSULATED COMPONENT				
R856	1-249-417-11	CARBON	1K	5%	1/4W	F
R857	1-249-431-11	CARBON	15K	5%	1/4W	
R858	1-249-441-11	CARBON	100K	5%	1/4W	
R859	1-260-076-11	CARBON	10	5%	1/2W	
R871	1-260-089-11	CARBON	150	5%	1/2W	
R872	1-260-089-11	CARBON	150	5%	1/2W	
R873	1-260-089-11	CARBON	150	5%	1/2W	
R874	1-260-089-11	CARBON	150	5%	1/2W	
R875	1-249-402-11	CARBON	56	5%	1/4W	F
R876	1-249-417-11	CARBON	1K	5%	1/4W	F
R877	1-249-433-11	CARBON	22K	5%	1/4W	
R878	1-249-417-11	CARBON	1K	5%	1/4W	F
R879	1-249-441-11	CARBON	100K	5%	1/4W	
R880	1-247-903-00	CARBON	1M	5%	1/4W	
⚠R881	1-216-454-11	METAL OXIDE	390	5%	2W	
R883	1-249-437-11	CARBON	47K	5%	1/4W	
R885	1-249-429-11	CARBON	10K	5%	1/4W	
R887	1-249-441-11	CARBON	100K	5%	1/4W	
R889	1-249-429-11	CARBON	10K	5%	1/4W	
R891	1-249-438-11	CARBON	56K	5%	1/4W	
R892	1-249-439-11	CARBON	68K	5%	1/4W	
R894	1-249-429-11	CARBON	10K	5%	1/4W	
R895	1-249-429-11	CARBON	10K	5%	1/4W	
R896	1-249-435-11	CARBON	33K	5%	1/4W	
R897	1-249-433-11	CARBON	22K	5%	1/4W	
R898	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R900	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R961	1-215-870-11	METAL OXIDE	1.5K	5%	1W	
R962	1-215-870-11	METAL OXIDE	1.5K	5%	1W	
⚠R963	1-212-881-11	FUSIBLE	100	5%	1/4W	
⚠R964	1-212-881-11	FUSIBLE	100	5%	1/4W	
R965	1-249-431-11	CARBON	15K	5%	1/4W	
R966	1-249-435-11	CARBON	33K	5%	1/4W	
R967	1-249-435-11	CARBON	33K	5%	1/4W	
⚠R968	1-202-972-61	FUSIBLE	1	5%	1/4W	
R969	1-249-439-11	CARBON	68K	5%	1/4W	
R970	1-249-433-11	CARBON	22K	5%	1/4W	
R971	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R972	1-249-433-11	CARBON	22K	5%	1/4W	
R973	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R974	1-249-429-11	CARBON	10K	5%	1/4W	
R982	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R983	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R984	1-249-429-11	CARBON	10K	5%	1/4W	
R985	1-249-416-11	CARBON	820	5%	1/4W	F
R986	1-249-416-11	CARBON	820	5%	1/4W	F
R987	1-249-419-11	CARBON	1.5K	5%	1/4W	F
		< RELAY >				
RY881	1-755-141-11	RELAY				
		< THERMISTOR(POSITIVE) >				
THP841	1-807-796-11	THERMISTOR				
		< TERMINAL >				
TM801	1-694-677-11	TERMINAL BOARD (4P)(FRONT SPEAKER)				

****

1-676-971-11 HP BOARD
****

Ref. No.	Part No.	Description			Remarks
		< CAPACITOR >			
C1691	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1692	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1693	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
CN1691	1-785-316-51	PIN, CONNECTOR (STRAIGHT) 4P			
		< EARTH >			
* EPT1691	1-537-738-21	TERMINAL, EARTH			
		< FERRITE BEAD >			
FB1691	1-412-473-21	INDUCTOR	0UH		
FB1692	1-412-473-21	INDUCTOR	0UH		
FB1693	1-412-473-21	INDUCTOR	0UH		
		< JACK >			
J1691	1-793-829-11	JACK, HEADPHONE (PHONES)			

****

1-671-505-11 IN SW BOARD
****

Ref. No.	Part No.	Description
		< CONNECTOR >
* CN710	1-568-941-11	PIN, CONNECTOR 3P
		< SWITCH >
S703	1-771-218-11	SWITCH, MICRO (MID IN)
S704	1-771-218-11	SWITCH, MICRO (IN)

****

1-671-502-11 INT/COUNT SW BOARD
****

Ref. No.	Part No.	Description
		< SWITCH >
S705	1-771-264-11	SWITCH, PUSH (DETECTION)(1 KEY)(INIT)
S706	1-771-264-11	SWITCH, PUSH (DETECTION)(1 KEY)(COUNT)

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks	
	A-2007-838-A	LEAF SW BOARD, COMPLETE				
		************************				
		< CAPACITOR >				
C1001	1-107-716-11	ELECT	33uF	20.00%	10V	
		< CONNECTOR >				
CN1001	1-568-860-21	SOCKET, CONNECTOR 17P				
		< DIODE >				
D1001	8-719-911-19	DIODE 1SS133T-72				
D1002	8-719-911-19	DIODE 1SS133T-72				
		< IC >				
IC1001	8-749-016-76	IC RPI-321				
IC1002	8-749-016-76	IC RPI-321				
		< TRANSISTOR >				
Q1001	8-729-029-56	TRANSISTOR	DTA144ESA-TP			
		< RESISTOR >				
R907	1-247-879-11	CARBON	100K	5%	1/4W	
R1001	1-249-409-11	CARBON	220	5%	1/4W	F
R1002	1-249-409-11	CARBON	220	5%	1/4W	F
R1003	1-249-414-11	CARBON	560	5%	1/4W	F
R1004	1-247-834-11	CARBON	1.3K	5%	1/4W	
R1005	1-247-818-11	CARBON	300	5%	1/4W	
R1006	1-247-864-11	CARBON	24K	5%	1/4W	
R1007	1-247-780-00	CARBON	7.5	5%	1/4W	
R1008	1-249-417-11	CARBON	1K	5%	1/4W	F
		< VARIABLE RESISTOR >				
RV1001	1-241-785-11	RES, ADJ, CARBON 10K				
RV1002	1-241-785-11	RES, ADJ, CARBON 10K				
		< SWITCH >				
S1001	1-570-953-11	SWITCH, PUSH (1 KEY)(DECK A PLAY)				
S1002	1-570-953-11	SWITCH, PUSH (1 KEY)(DECK B PLAY)				
S1003	1-771-333-11	SWITCH, LEAF (DECK A HALF)				
S1004	1-771-205-11	SWITCH, LEAF (DECK A 70/120)				
S1005	1-771-205-11	SWITCH, LEAF (DECK A REC)				
S1006	1-771-333-11	SWITCH, LEAF (DECK B HALF)				
S1008	1-771-205-11	SWITCH, LEAF (DECK B 70/120)				
S1009	1-771-205-11	SWITCH, LEAF (DECK B REC)				

****

Ref. No.	Part No.	Description			Remarks	
	1-671-508-11	LOAD MOTOR BOARD				
		*****************				
		< CAPACITOR >				
C703	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
C704	1-126-964-11	ELECT	10uF	20.00%	50V	
C712	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
		< CONNECTOR >				
CN713	1-506-469-11	PIN, CONNECTOR 4P				
		< DIODE >				
D702	8-719-109-85	DIODE MTZJ-T-72-5.1B				
		< IC >				
IC702	8-759-633-65	IC M54641L				
		< RESISTOR >				
R703	1-249-411-11	CARBON	330	5%	1/4W	
R704	1-249-401-11	CARBON	47	5%	1/4W	F

****

Ref. No.	Part No.	Description			Remarks
	A-4475-164-A	MAIN BOARD, COMPLETE (HK,SP,MY)			
		*********************			
	A-4475-214-A	MAIN BOARD, COMPLETE (JE)			
		*********************			
	4-875-327-31	HEATSINK			
	7-685-646-79	SCREW+BVTP	3X8 TYPE2 N-S		
		< BATTERY >			
BT900	1-125-623-11	DOUBLE LAYER	0.22F		5.5V
		< CAPACITOR >			
C101	1-126-960-11	ELECT	1uF	20.00%	50V
C103	1-126-960-11	ELECT	1uF	20.00%	50V
C105	1-126-964-11	ELECT	10uF	20.00%	50V
C107	1-136-157-00	FILM	0.022uF	5.00%	50V
C108	1-136-157-00	FILM	0.022uF	5.00%	50V
C109	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C110	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C111	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C112	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C113	1-126-964-11	ELECT	10uF	20.00%	50V
C114	1-136-495-11	FILM	0.068uF	5.00%	50V
C115	1-130-481-00	MYLAR	0.0068uF	5%	50V
C116	1-130-481-00	MYLAR	0.0068uF	5%	50V
C117	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C118	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C119	1-136-159-00	FILM	0.033uF	5.00%	50V
C120	1-126-964-11	ELECT	10uF	20.00%	50V
C121	1-126-964-11	ELECT	10uF	20.00%	50V
C122	1-136-165-00	FILM	0.1uF	5.00%	50V
C123	1-136-165-00	FILM	0.1uF	5.00%	50V
C124	1-126-960-11	ELECT	1uF	20.00%	50V
C126	1-136-165-00	FILM	0.1uF	5.00%	50V
C127	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C128	1-104-664-11	ELECT	47uF	20.00%	16V
C129	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C132	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C134	1-126-964-11	ELECT	10uF	20.00%	50V
C135	1-126-960-11	ELECT	1uF	20.00%	50V
C136	1-126-964-11	ELECT	10uF	20.00%	50V
C137	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C139	1-104-664-11	ELECT	47uF	20.00%	16V
C140	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C141	1-126-960-11	ELECT	1uF	20.00%	50V
C143	1-104-665-11	ELECT	100uF	20.00%	10V
C144	1-104-665-11	ELECT	100uF	20.00%	10V

MAIN

Ref. No.	Part No.	Description			Remarks
C151	1-126-960-11	ELECT	1uF	20.00%	50V
C153	1-126-960-11	ELECT	1uF	20.00%	50V
C155	1-126-964-11	ELECT	10uF	20.00%	50V
C157	1-136-157-00	FILM	0.022uF	5.00%	50V
C158	1-136-157-00	FILM	0.022uF	5.00%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C160	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C162	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C163	1-126-964-11	ELECT	10uF	20.00%	50V
C164	1-136-495-11	FILM	0.068uF	5.00%	50V
C165	1-130-481-00	MYLAR	0.0068uF	5%	50V
C166	1-130-481-00	MYLAR	0.0068uF	5%	50V
C167	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C168	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C169	1-136-159-00	FILM	0.033uF	5.00%	50V
C170	1-126-964-11	ELECT	10uF	20.00%	50V
C171	1-126-964-11	ELECT	10uF	20.00%	50V
C172	1-136-165-00	FILM	0.1uF	5.00%	50V
C173	1-136-165-00	FILM	0.1uF	5.00%	50V
C174	1-126-960-11	ELECT	1uF	20.00%	50V
C181	1-126-961-11	ELECT	2.2uF	20.00%	50V
C191	1-126-960-11	ELECT	1uF	20.00%	50V
C198	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C288	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C291	1-126-960-11	ELECT	1uF	20.00%	50V
C292	1-126-960-11	ELECT	1uF	20.00%	50V
C293	1-126-960-11	ELECT	1uF	20.00%	50V
C294	1-126-960-11	ELECT	1uF	20.00%	50V
C295	1-104-664-11	ELECT	47uF	20.00%	16V
C296	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C297	1-126-963-11	ELECT	4.7uF	20.00%	50V
C298	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C299	1-126-963-11	ELECT	4.7uF	20.00%	50V
C301	1-126-960-11	ELECT	1uF	20.00%	50V
C302	1-130-479-00	MYLAR	0.0047uF	5%	50V
C303	1-136-165-00	FILM	0.1uF	5.00%	50V
C304	1-136-165-00	FILM	0.1uF	5.00%	50V
C305	1-126-964-11	ELECT	10uF	20.00%	50V
C306	1-126-960-11	ELECT	1uF	20.00%	50V
C307	1-126-959-11	ELECT	0.47uF	20.00%	50V
C308	1-126-964-11	ELECT	10uF	20.00%	50V
C309	1-137-194-81	FILM	0.47uF	5.00%	50V
C310	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C311	1-126-964-11	ELECT	10uF	20.00%	50V
C312	1-126-959-11	ELECT	0.47uF	20.00%	50V
C313	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C314	1-126-964-11	ELECT	10uF	20.00%	50V
C315	1-126-963-11	ELECT	4.7uF	20.00%	50V
C316	1-126-933-11	ELECT	100uF	20.00%	16V
C317	1-104-665-11	ELECT	100uF	20.00%	10V
C318	1-126-959-11	ELECT	0.47uF	20.00%	50V
C319	1-126-959-11	ELECT	0.47uF	20.00%	50V
C321	1-126-964-11	ELECT	10uF	20.00%	50V
C322	1-126-964-11	ELECT	10uF	20.00%	50V
C351	1-126-960-11	ELECT	1uF	20.00%	50V
C352	1-130-479-00	MYLAR	0.0047uF	5%	50V
C353	1-136-165-00	FILM	0.1uF	5.00%	50V
C354	1-136-165-00	FILM	0.1uF	5.00%	50V
C355	1-126-964-11	ELECT	10uF	20.00%	50V
C356	1-126-960-11	ELECT	1uF	20.00%	50V
C357	1-126-959-11	ELECT	0.47uF	20.00%	50V
C358	1-126-964-11	ELECT	10uF	20.00%	50V
C359	1-137-194-81	FILM	0.47uF	5.00%	50V
C360	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C362	1-117-721-11	CERAMIC CHIP	4700PF	5.00%	25V
C363	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C368	1-126-959-11	ELECT	0.47uF	20.00%	50V
C369	1-126-959-11	ELECT	0.47uF	20.00%	50V
C410	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
C411	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C412	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C414	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C416	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C462	1-104-665-11	ELECT	100uF	20.00%	10V
C464	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C497	1-126-964-11	ELECT	10uF	20.00%	50V
C498	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C499	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C501	1-136-165-00	FILM	0.1uF	5.00%	50V
C502	1-136-165-00	FILM	0.1uF	5.00%	50V
C503	1-126-964-11	ELECT	10uF	20.00%	50V
C506	1-136-165-00	FILM	0.1uF	5.00%	50V
C507	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C508	1-126-964-11	ELECT	10uF	20.00%	50V
C509	1-104-665-11	ELECT	100uF	20.00%	10V
C511	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C521	1-104-665-11	ELECT	100uF	20.00%	10V
C541	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C542	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C702	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C703	1-126-961-11	ELECT	2.2uF	20.00%	50V
C704	1-126-961-11	ELECT	2.2uF	20.00%	50V
C705	1-126-961-11	ELECT	2.2uF	20.00%	50V
C706	1-126-961-11	ELECT	2.2uF	20.00%	50V
C707	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C708	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C709	1-126-960-11	ELECT	1uF	20.00%	50V
C710	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C711	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C714	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C715	1-126-926-11	ELECT	1000uF	20.00%	10V
C716	1-104-665-11	ELECT	100uF	20.00%	10V
C717	1-104-665-11	ELECT	100uF	20.00%	10V
C901	1-115-364-11	ELECT	22000uF	20.00%	16V
C902	1-126-943-11	ELECT	2200uF	20.00%	25V
C903	1-126-964-11	ELECT	10uF	20.00%	50V
C904	1-126-964-11	ELECT	10uF	20.00%	50V
C905	1-126-964-11	ELECT	10uF	20.00%	50V
C906	1-126-964-11	ELECT	10uF	20.00%	50V
C907	1-126-924-11	ELECT	330uF	20.00%	6.3V
C908	1-126-924-11	ELECT	330uF	20.00%	6.3V
C909	1-126-964-11	ELECT	10uF	20.00%	50V
C911	1-126-917-11	ELECT	3300uF	20.00%	6.3V
C912	1-104-665-11	ELECT	100uF	20.00%	10V
C913	1-126-964-11	ELECT	10uF	20.00%	50V
C914	1-126-917-11	ELECT	3300uF	20.00%	6.3V
C915	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C920	1-126-953-11	ELECT	2200uF	20.00%	35V
C921	1-126-964-11	ELECT	10uF	20.00%	50V

Ref. No.	Part No.	Description	Remarks
C922	1-126-933-11	ELECT 100uF 20.00%	16V
C926	1-126-964-11	ELECT 10uF 20.00%	50V
C927	1-126-964-11	ELECT 10uF 20.00%	50V
C928	1-126-964-11	ELECT 10uF 20.00%	50V
C929	1-126-964-11	ELECT 10uF 20.00%	50V
C931	1-126-964-11	ELECT 10uF 20.00%	50V
C932	1-126-935-11	ELECT 470uF 20.00%	16V
C935	1-126-964-11	ELECT 10uF 20.00%	50V
C936	1-126-933-11	ELECT 100uF 20.00%	16V
C941	1-163-038-11	CERAMIC CHIP 0.1uF	25V
		< CONNECTOR >	
CN103	1-785-316-11	PIN, CONNECTOR (STRAIGHT) 4P	
* CN302	1-568-449-11	HOUSING, CONNECTOR (PC BOARD)3P	
CN304	1-784-778-11	CONNECTOR, FFC 17P	
CN305	1-784-776-11	CONNECTOR, FFC 15P	
CN401	1-785-320-11	PIN, CONNECTOR (STRAIGHT) 8P	
CN502	1-784-774-11	CONNECTOR, FFC 13P	
CN503	1-568-830-11	CONNECTOR, FFC 11P	
CN522	1-784-778-11	CONNECTOR, FFC 17P	
CN524	1-784-776-11	CONNECTOR, FFC 15P	
CN701	1-784-786-11	CONNECTOR, FFC 25P	
CN901	1-778-981-21	CONNECTOR, BOARD TO BOARD 13P	
CN902	1-778-981-21	CONNECTOR, BOARD TO BOARD 13P	
* CN941	1-564-518-11	PLUG, CONNECTOR 3P	
		< DIODE >	
D100	8-719-200-82	DIODE 11ES2-TB5	
D101	8-719-200-82	DIODE 11ES2-TB5	
D181	8-719-988-61	DIODE 1SS355TE-17	
D182	8-719-988-61	DIODE 1SS355TE-17	
D501	8-719-988-61	DIODE 1SS355TE-17	
D502	8-719-988-61	DIODE 1SS355TE-17	
D503	8-719-988-61	DIODE 1SS355TE-17	
D504	8-719-988-61	DIODE 1SS355TE-17	
D505	8-719-988-61	DIODE 1SS355TE-17	
D507	8-719-200-82	DIODE 11ES2-TB5	
D511	8-719-988-61	DIODE 1SS355TE-17	
D512	8-719-988-61	DIODE 1SS355TE-17	
D513	8-719-988-61	DIODE 1SS355TE-17	
D912	8-719-200-82	DIODE 11ES2-TB5	
D914	8-719-200-82	DIODE 11ES2-TB5	
D915	8-719-200-82	DIODE 11ES2-TB5	
D916	8-719-200-82	DIODE 11ES2-TB5	
D917	8-719-200-82	DIODE 11ES2-TB5	
D918	8-719-200-82	DIODE 11ES2-TB5	
D919	8-719-988-61	DIODE 1SS355TE-17	
D951	8-719-200-82	DIODE 11ES2-TB5	
		< EARTH >	
* EP901	1-537-738-21	TERMINAL, EARTH	
		< FERRITE BEAD >	
FB416	1-414-772-11	FERRITE 0UH	
FB462	1-414-772-11	FERRITE 0UH	
FB499	1-414-772-11	FERRITE 0UH	
FB500	1-414-772-11	FERRITE 0UH	
FB501	1-414-772-11	FERRITE 0UH	

Ref. No.	Part No.	Description	Remarks
FB502	1-414-772-11	FERRITE 0UH	
FB504	1-414-772-11	FERRITE 0UH	
FB505	1-414-772-11	FERRITE 0UH	
FB506	1-414-772-11	FERRITE 0UH	
FB507	1-414-772-11	FERRITE 0UH	
FB508	1-414-772-11	FERRITE 0UH	
FB509	1-414-772-11	FERRITE 0UH	
FB510	1-414-772-11	FERRITE 0UH	
FB511	1-414-772-11	FERRITE 0UH	
FB512	1-414-772-11	FERRITE 0UH	
FB700	1-414-772-11	FERRITE 0UH	
		< FILTER >	
FL101	1-233-289-21	FILTER, EMI (SMD)	
FL202	1-233-289-21	FILTER, EMI (SMD)	
		< IC >	
IC101	8-759-663-66	IC M61502FP	
IC202	8-759-652-01	IC LA2615	
IC301	8-759-652-02	IC HA12226F	
IC401	8-759-676-73	IC M30620MCA-A55FP	
IC501	8-759-635-63	IC M51943BSL-TP	
IC502	8-759-481-02	IC M62016L	
IC503	8-759-548-57	IC SN74LV00ANSR	
IC901	8-759-231-53	IC M5F7805L	
IC902	8-759-701-65	IC M5F79M05L	
IC903	8-759-158-62	IC TA78057S	
IC904	8-759-231-53	IC M5F7805L	
IC905	8-759-231-58	IC M5F7812L	
IC906	8-759-604-86	IC M5F7807L	
IC908	8-759-701-75	IC NJM7805FA	
IC909	8-759-604-32	IC M5F7810L	
IC910	8-759-686-72	IC uPC29L04J-T	
		< JACK >	
J101	1-793-987-11	JACK, PIN 2P (VIDEO(AUDIO) IN)	
J102	1-770-377-31	JACK, PIN 1P (WOOFER OUT)	
		< JUMPER RESISTOR >	
JR2	1-216-295-11	SHORT 0	
JR3	1-216-295-11	SHORT 0	
JR23	1-216-295-11	SHORT 0	
JR25	1-216-296-91	SHORT 0	
JR37	1-216-296-91	SHORT 0	
JR42	1-216-296-91	SHORT 0	
JR44	1-216-296-91	SHORT 0	
JR47	1-216-296-91	SHORT 0	
JR55	1-216-296-91	SHORT 0	
JR406	1-216-295-11	SHORT 0	
JR495	1-216-295-11	SHORT 0	
JR500	1-216-296-91	SHORT 0	
JR511	1-216-295-11	SHORT 0	
JR531	1-216-295-11	SHORT 0	
JR532	1-216-295-11	SHORT 0	
JR922	1-216-296-91	SHORT 0	
JR923	1-216-296-91	SHORT 0	
JR924	1-216-296-91	SHORT 0	

MAIN

Ref. No.	Part No.	Description			Remarks
		< COIL >			
L301	1-410-393-11	INDUCTOR CHIP	100uH		
L552	1-410-381-11	INDUCTOR CHIP	10uH		
		< TRANSISTOR >			
Q101	8-729-107-43	TRANSISTOR	2SC3624-T1L1718		
Q102	8-729-107-43	TRANSISTOR	2SC3624-T1L1718		
Q130	8-729-141-30	TRANSISTOR	2SC3623ATP-LK		
Q151	8-729-107-43	TRANSISTOR	2SC3624-T1L1718		
Q152	8-729-107-43	TRANSISTOR	2SC3624-T1L1718		
Q181	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q182	8-729-027-23	TRANSISTOR	DTA114EKA-T146		
Q183	8-729-027-23	TRANSISTOR	DTA114EKA-T146		
Q184	8-729-027-23	TRANSISTOR	DTA114EKA-T146		
Q185	8-729-027-23	TRANSISTOR	DTA114EKA-T146		
Q391	8-729-140-04	TRANSISTOR	2SB1116-TP-LK		
Q392	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q393	8-729-140-04	TRANSISTOR	2SB1116-TP-LK		
Q394	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q395	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q396	8-729-116-59	TRANSISTOR	2SB1068TP		
Q397	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q501	8-729-120-28	TRANSISTOR	2SC3052EF-T1-LEF		
Q901	8-729-040-20	TRANSISTOR	RT1P137L-TP		
Q902	8-729-027-31	TRANSISTOR	DTA124EKA-T146		
Q903	8-729-040-19	TRANSISTOR	RT1N137L-TP		
Q904	8-729-901-00	TRANSISTOR	DTC124EKA-T146		
Q905	8-729-600-22	TRANSISTOR	2SA1235TP-1EF		
Q906	8-729-027-44	TRANSISTOR	DTC114TKA-T146		
Q910	8-729-040-20	TRANSISTOR	RT1P137L-TP		
Q911	8-729-901-00	TRANSISTOR	DTC124EKA-T146		
Q912	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q914	8-729-018-59	TRANSISTOR	2SB1375(LB-SONY)		
Q941	8-729-111-29	TRANSISTOR	2SD1616A-TP-LK		
Q942	8-729-600-22	TRANSISTOR	2SA1235TP-1EF		
		< RESISTOR >			
R101	1-216-073-00	METAL CHIP	10K	5%	1/10W
R102	1-216-073-00	METAL CHIP	10K	5%	1/10W
R103	1-216-073-00	METAL CHIP	10K	5%	1/10W
R104	1-216-121-11	RES-CHIP	1M	5%	1/10W
R105	1-216-113-00	METAL CHIP	470K	5%	1/10W
R106	1-216-081-00	METAL CHIP	22K	5%	1/10W
R107	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R109	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R110	1-216-097-11	RES-CHIP	100K	5%	1/10W
R111	1-216-089-11	RES-CHIP	47K	5%	1/10W
R112	1-216-073-00	METAL CHIP	10K	5%	1/10W
R121	1-216-025-11	RES-CHIP	100	5%	1/10W
R122	1-216-025-11	RES-CHIP	100	5%	1/10W
R123	1-216-025-11	RES-CHIP	100	5%	1/10W
R124	1-216-073-00	METAL CHIP	10K	5%	1/10W
R131	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R132	1-216-049-11	RES-CHIP	1K	5%	1/10W
R133	1-216-097-11	RES-CHIP	100K	5%	1/10W
R134	1-216-073-00	METAL CHIP	10K	5%	1/10W
R135	1-216-073-00	METAL CHIP	10K	5%	1/10W
R136	1-216-097-11	RES-CHIP	100K	5%	1/10W
R137	1-216-025-11	RES-CHIP	100	5%	1/10W
R141	1-216-049-11	RES-CHIP	1K	5%	1/10W
R142	1-216-097-11	RES-CHIP	100K	5%	1/10W
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-073-00	METAL CHIP	10K	5%	1/10W
R154	1-216-121-11	RES-CHIP	1M	5%	1/10W
R155	1-216-113-00	METAL CHIP	470K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R159	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R160	1-216-097-11	RES-CHIP	100K	5%	1/10W
R161	1-216-089-11	RES-CHIP	47K	5%	1/10W
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W
R181	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R182	1-216-097-11	RES-CHIP	100K	5%	1/10W
R183	1-216-097-11	RES-CHIP	100K	5%	1/10W
R191	1-216-049-11	RES-CHIP	1K	5%	1/10W
R192	1-216-097-11	RES-CHIP	100K	5%	1/10W
R291	1-216-049-11	RES-CHIP	1K	5%	1/10W
R292	1-216-049-11	RES-CHIP	1K	5%	1/10W
R293	1-216-025-11	RES-CHIP	100	5%	1/10W
R294	1-216-025-11	RES-CHIP	100	5%	1/10W
R300	1-216-001-00	METAL CHIP	10	5%	1/10W
R301	1-216-085-00	METAL CHIP	33K	5%	1/10W
R302	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R303	1-216-025-11	RES-CHIP	100	5%	1/10W
R304	1-216-025-11	RES-CHIP	100	5%	1/10W
R305	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R306	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R307	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R308	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R309	1-216-081-00	METAL CHIP	22K	5%	1/10W
R311	1-216-121-11	RES-CHIP	1M	5%	1/10W
R312	1-216-102-00	RES-CHIP	160K	5%	1/10W
R313	1-216-097-11	RES-CHIP	100K	5%	1/10W
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W
R316	1-216-086-00	RES-CHIP	36K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W
R318	1-216-073-00	METAL CHIP	10K	5%	1/10W
R319	1-216-111-00	METAL CHIP	390K	5%	1/10W
R320	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R321	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R323	1-216-089-11	RES-CHIP	47K	5%	1/10W
R324	1-216-089-11	RES-CHIP	47K	5%	1/10W
R351	1-216-085-00	METAL CHIP	33K	5%	1/10W
R352	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R353	1-216-025-11	RES-CHIP	100	5%	1/10W
R354	1-216-025-11	RES-CHIP	100	5%	1/10W
R355	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R356	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R357	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R358	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R359	1-216-085-00	METAL CHIP	33K	5%	1/10W
R360	1-216-045-00	METAL CHIP	680	5%	1/10W
R361	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R363	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R364	1-216-045-00	METAL CHIP	680	5%	1/10W
R366	1-216-061-00	METAL CHIP	3.3K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R367	1-216-089-11	RES-CHIP	47K	5%	1/10W
R368	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R369	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R371	1-216-089-11	RES-CHIP	47K	5%	1/10W
R372	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R373	1-216-049-11	RES-CHIP	1K	5%	1/10W
R374	1-216-089-11	RES-CHIP	47K	5%	1/10W
R375	1-216-094-00	RES-CHIP	75K	5%	1/10W
R376	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R377	1-216-089-11	RES-CHIP	47K	5%	1/10W
R378	1-216-094-00	RES-CHIP	75K	5%	1/10W
R400	1-216-025-11	RES-CHIP	100	5%	1/10W
R404	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R408	1-216-025-11	RES-CHIP	100	5%	1/10W
R409	1-216-073-00	METAL CHIP	10K	5%	1/10W
R411	1-216-109-00	METAL CHIP	330K	5%	1/10W
R412	1-216-025-11	RES-CHIP	100	5%	1/10W
R413	1-216-295-11	SHORT	0		
R416	1-216-073-00	METAL CHIP	10K	5%	1/10W
R417	1-216-073-00	METAL CHIP	10K	5%	1/10W
R418	1-216-025-11	RES-CHIP	100	5%	1/10W
R422	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R423	1-216-025-11	RES-CHIP	100	5%	1/10W
R424	1-216-025-11	RES-CHIP	100	5%	1/10W
R425	1-216-025-11	RES-CHIP	100	5%	1/10W
R426	1-216-025-11	RES-CHIP	100	5%	1/10W
R428	1-216-025-11	RES-CHIP	100	5%	1/10W
R429	1-216-001-00	METAL CHIP	10	5%	1/10W
R430	1-216-001-00	METAL CHIP	10	5%	1/10W
R431	1-216-025-11	RES-CHIP	100	5%	1/10W
R432	1-216-025-11	RES-CHIP	100	5%	1/10W
R433	1-216-025-11	RES-CHIP	100	5%	1/10W
R434	1-216-025-11	RES-CHIP	100	5%	1/10W
R435	1-216-025-11	RES-CHIP	100	5%	1/10W
R436	1-216-073-00	METAL CHIP	10K	5%	1/10W
R437	1-216-073-00	METAL CHIP	10K	5%	1/10W
R438	1-216-049-11	RES-CHIP	1K	5%	1/10W
R440	1-216-073-00	METAL CHIP	10K	5%	1/10W
R441	1-216-073-00	METAL CHIP	10K	5%	1/10W
R446	1-216-025-11	RES-CHIP	100	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R448	1-216-025-11	RES-CHIP	100	5%	1/10W
R449	1-216-025-11	RES-CHIP	100	5%	1/10W
R450	1-216-025-11	RES-CHIP	100	5%	1/10W
R451	1-216-025-11	RES-CHIP	100	5%	1/10W
R452	1-216-025-11	RES-CHIP	100	5%	1/10W
R453	1-216-073-00	METAL CHIP	10K	5%	1/10W
R454	1-216-073-00	METAL CHIP	10K	5%	1/10W
R455	1-216-073-00	METAL CHIP	10K	5%	1/10W
R463	1-216-025-11	RES-CHIP	100	5%	1/10W
R469	1-216-025-11	RES-CHIP	100	5%	1/10W
R470	1-216-025-11	RES-CHIP	100	5%	1/10W
R471	1-216-025-11	RES-CHIP	100	5%	1/10W
R473	1-216-025-11	RES-CHIP	100	5%	1/10W
R474	1-216-025-11	RES-CHIP	100	5%	1/10W
R475	1-216-025-11	RES-CHIP	100	5%	1/10W
R476	1-216-025-11	RES-CHIP	100	5%	1/10W
R477	1-216-025-11	RES-CHIP	100	5%	1/10W
R478	1-216-025-11	RES-CHIP	100	5%	1/10W
R479	1-216-025-11	RES-CHIP	100	5%	1/10W
R480	1-216-025-11	RES-CHIP	100	5%	1/10W
R481	1-216-025-11	RES-CHIP	100	5%	1/10W
R482	1-216-025-11	RES-CHIP	100	5%	1/10W
R483	1-216-025-11	RES-CHIP	100	5%	1/10W
R484	1-216-025-11	RES-CHIP	100	5%	1/10W
R485	1-216-025-11	RES-CHIP	100	5%	1/10W
R486	1-216-025-11	RES-CHIP	100	5%	1/10W
R487	1-216-025-11	RES-CHIP	100	5%	1/10W
R488	1-216-081-00	METAL CHIP	22K	5%	1/10W
R489	1-216-025-11	RES-CHIP	100	5%	1/10W
R490	1-216-025-11	RES-CHIP	100	5%	1/10W
R491	1-216-025-11	RES-CHIP	100	5%	1/10W
R492	1-216-089-11	RES-CHIP	47K	5%	1/10W
R493	1-216-089-11	RES-CHIP	47K	5%	1/10W
R494	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (HK,SP,MY)
R494	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (JE)
R495	1-216-025-11	RES-CHIP	100	5%	1/10W
R501	1-216-073-00	METAL CHIP	10K	5%	1/10W
R502	1-216-089-11	RES-CHIP	47K	5%	1/10W
R503	1-216-089-11	RES-CHIP	47K	5%	1/10W
R504	1-216-025-11	RES-CHIP	100	5%	1/10W
R505	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R506	1-216-041-00	METAL CHIP	470	5%	1/10W
R510	1-216-025-11	RES-CHIP	100	5%	1/10W
R513	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R514	1-216-295-11	SHORT	0		
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W
R522	1-216-073-00	METAL CHIP	10K	5%	1/10W
R523	1-216-073-00	METAL CHIP	10K	5%	1/10W
R524	1-216-073-00	METAL CHIP	10K	5%	1/10W
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W
R526	1-216-073-00	METAL CHIP	10K	5%	1/10W
R527	1-216-073-00	METAL CHIP	10K	5%	1/10W
R528	1-216-073-00	METAL CHIP	10K	5%	1/10W
R529	1-216-073-00	METAL CHIP	10K	5%	1/10W
R530	1-216-073-00	METAL CHIP	10K	5%	1/10W
R531	1-216-073-00	METAL CHIP	10K	5%	1/10W
R541	1-216-025-11	RES-CHIP	100	5%	1/10W
R542	1-216-025-11	RES-CHIP	100	5%	1/10W
R700	1-216-097-11	RES-CHIP	100K	5%	1/10W
R701	1-216-097-11	RES-CHIP	100K	5%	1/10W
R702	1-216-073-00	METAL CHIP	10K	5%	1/10W
R708	1-216-025-11	RES-CHIP	100	5%	1/10W
R709	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R901	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R902	1-216-081-00	METAL CHIP	22K	5%	1/10W
R903	1-216-049-11	RES-CHIP	1K	5%	1/10W
R904	1-216-222-00	RES-CHIP	10K	5%	1/8W
R905	1-216-208-00	RES-CHIP	2.7K	5%	1/8W
R925	1-216-037-00	METAL CHIP	330	5%	1/10W
R941	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R942	1-216-097-11	RES-CHIP	100K	5%	1/10W
R943	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R944	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R945	1-216-057-00	METAL CHIP	2.2K	5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remarks
RV301	1-238-600-11	RES, ADJ, CARBON 10K	
RV351	1-238-600-11	RES, ADJ, CARBON 10K	

< VIBRATOR >

Ref. No.	Part No.	Description	Remarks
X401	1-567-098-41	VIBRATOR, CRYSTAL (32.768K)	
X402	1-781-107-21	VIBRATOR, SERAMIC (16MHz)	

****

1-676-972-11 MIC BOARD
****

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C1601	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C1602	1-126-961-11	ELECT	2.2uF	20.00%	50V
C1603	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1604	1-162-215-31	CERAMIC	47PF	5%	50V
C1605	1-162-290-31	CERAMIC	470PF	10%	50V
C1606	1-126-956-91	ELECT	0.1uF	20.00%	50V
C1607	1-162-215-31	CERAMIC	47PF	5%	50V
C1608	1-162-282-31	CERAMIC	100PF	10%	50V
C1609	1-126-961-11	ELECT	2.2uF	20.00%	50V
C1610	1-126-964-11	ELECT	10uF	20.00%	50V
C1611	1-126-964-11	ELECT	10uF	20.00%	50V
C1612	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C1613	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C1614	1-164-159-11	CERAMIC	0.1uF		50V
C1651	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C1652	1-126-961-11	ELECT	2.2uF	20.00%	50V
C1653	1-126-960-11	ELECT	1uF	20.00%	50V
C1654	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1655	1-162-305-11	CERAMIC	0.0068uF	30.00%	16V
C1656	1-136-495-11	FILM	0.068uF	5.00%	50V
C1657	1-126-957-11	ELECT	0.22uF	20.00%	50V
C1658	1-126-957-11	ELECT	0.22uF	20.00%	50V
C1659	1-136-167-00	FILM	0.15uF	5.00%	50V
C1660	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1661	1-162-305-11	CERAMIC	0.0068uF	30.00%	16V
C1662	1-126-960-11	ELECT	1uF	20.00%	50V
C1663	1-161-494-00	CERAMIC	0.022uF		25V
C1664	1-136-495-11	FILM	0.068uF	5.00%	50V
C1665	1-104-664-11	ELECT	47uF	20.00%	10V
C1666	1-164-159-11	CERAMIC	0.1uF		50V
C1667	1-104-664-11	ELECT	47uF	20.00%	10V
C1668	1-126-961-11	ELECT	2.2uF	20.00%	50V

< EARTH >

Ref. No.	Part No.	Description	Remarks
* EPT1601	1-537-738-21	TERMINAL, EARTH	

< IC >

Ref. No.	Part No.	Description	Remarks
IC1601	8-759-634-51	IC M5218AP	
IC1651	8-759-496-40	IC M65850FP	

< JACK >

Ref. No.	Part No.	Description	Remarks
J1601	1-793-829-11	JACK, HEADPHONE (MIC 2)	
J1651	1-793-829-11	JACK, HEADPHONE (MIC 1)	

< RESISTOR >

Ref. No.	Part No.	Description			Remarks	
R1601	1-249-429-11	CARBON	10K	5%	1/4W	
R1602	1-249-417-11	CARBON	1K	5%	1/4W	F
R1603	1-249-441-11	CARBON	100K	5%	1/4W	
R1604	1-249-417-11	CARBON	1K	5%	1/4W	F
R1605	1-249-437-11	CARBON	47K	5%	1/4W	
R1606	1-249-429-11	CARBON	10K	5%	1/4W	
R1607	1-247-885-00	CARBON	180K	5%	1/4W	
R1608	1-247-807-31	CARBON	100	5%	1/4W	
R1651	1-249-429-11	CARBON	10K	5%	1/4W	
R1652	1-249-417-11	CARBON	1K	5%	1/4W	F
R1653	1-249-433-11	CARBON	22K	5%	1/4W	
R1654	1-249-433-11	CARBON	22K	5%	1/4W	
R1655	1-249-433-11	CARBON	22K	5%	1/4W	
R1656	1-249-437-11	CARBON	47K	5%	1/4W	
R1657	1-249-433-11	CARBON	22K	5%	1/4W	
R1658	1-249-433-11	CARBON	22K	5%	1/4W	
R1659	1-249-433-11	CARBON	22K	5%	1/4W	
R1660	1-249-431-11	CARBON	15K	5%	1/4W	
R1661	1-247-881-00	CARBON	120K	5%	1/4W	
R1664	1-249-431-11	CARBON	15K	5%	1/4W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remarks
RV1601	1-227-171-11	RES, VAR CARBON 50K (MIC VOL)	
RV1651	1-227-171-11	RES, VAR CARBON 50K (ECHO VOL)	

****

1-671-503-11 OUT SW BOARD
****

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
* CN709	1-568-943-11	PIN, CONNECTOR 5P	
CN715	1-506-481-11	PIN, CONNECTOR 2P	

< SWITCH >

Ref. No.	Part No.	Description	Remarks
S701	1-771-218-11	SWITCH, MICRO (MID OUT)	
S702	1-771-218-11	SWITCH, MICRO (LID)	
S708	1-771-218-11	SWITCH, MICRO (OUT)	

****

A-4475-161-A PANEL BOARD, COMPLETE
****

Ref. No.	Part No.	Description	Remarks
	4-226-723-01	HOLDER(FL)	
	4-949-935-41	CUSHION (FL)	

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C691	1-162-286-31	CERAMIC	220PF	10%	50V
C692	1-162-286-31	CERAMIC	220PF	10%	50V
C701	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C702	1-124-589-11	ELECT	47uF	20%	16V
C703	1-162-290-31	CERAMIC	470PF	10%	50V
C704	1-162-294-31	CERAMIC	0.001uF	10%	50V
C705	1-162-294-31	CERAMIC	0.001uF	10%	50V
C711	1-162-286-31	CERAMIC	220PF	10%	50V
C712	1-162-286-31	CERAMIC	220PF	10%	50V
C713	1-162-286-31	CERAMIC	220PF	10%	50V

Ref. No.	Part No.	Description			Remarks
C714	1-162-286-31	CERAMIC	220PF	10%	50V
C715	1-162-286-31	CERAMIC	220PF	10%	50V
C716	1-162-286-31	CERAMIC	220PF	10%	50V
C717	1-162-286-31	CERAMIC	220PF	10%	50V
C718	1-162-286-31	CERAMIC	220PF	10%	50V
C719	1-162-286-31	CERAMIC	220PF	10%	50V
C720	1-162-286-31	CERAMIC	220PF	10%	50V
C721	1-162-286-31	CERAMIC	220PF	10%	50V
C722	1-162-286-31	CERAMIC	220PF	10%	50V
C723	1-162-286-31	CERAMIC	220PF	10%	50V
C724	1-162-286-31	CERAMIC	220PF	10%	50V
C725	1-162-286-31	CERAMIC	220PF	10%	50V
C726	1-162-286-31	CERAMIC	220PF	10%	50V
C727	1-162-286-31	CERAMIC	220PF	10%	50V
C728	1-162-286-31	CERAMIC	220PF	10%	50V
C731	1-124-261-00	ELECT	10uF	20%	50V
C732	1-124-261-00	ELECT	10uF	20%	50V
C751	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C752	1-124-589-11	ELECT	47uF	20%	16V
C755	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C756	1-126-157-11	ELECT	10uF	20%	16V
C757	1-162-290-31	CERAMIC	470PF	10%	50V
C761	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C762	1-126-157-11	ELECT	10uF	20%	16V
C763	1-124-259-11	ELECT	4.7uF	20.00%	16V
C764	1-162-303-11	CERAMIC	0.0033uF	30.00%	16V
C765	1-126-157-11	ELECT	10uF	20%	16V
C766	1-126-157-11	ELECT	10uF	20%	16V
C767	1-126-157-11	ELECT	10uF	20%	16V
C768	1-162-294-31	CERAMIC	0.001uF	10%	50V
C769	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< CONNECTOR >			
CN701	1-784-733-11	CONNECTOR, FFC 11P			
CN702	1-785-334-11	PIN, CONNECTOR (LIGHT ANGLE)8P			
CN703	1-785-337-11	PIN, CONNECTOR (LIGHT ANGLE)11P			
CN704	1-785-333-11	PIN, CONNECTOR (LIGHT ANGLE)7P			
		< DIODE >			
D601	8-719-058-04	DIODE SEL5223S-TP15 (I/⏻)			
D602	8-719-058-04	DIODE SEL5223S-TP15 (TIMER SELECT)			
D603	8-719-058-64	DIODE SEL5823A-TP15 (V-GROOVE)			
D604	8-719-058-64	DIODE SEL5823A-TP15 (CINEMA SPACE)			
D691	8-719-050-84	DIODE RB441Q-40T-72			
D755	8-719-911-19	DIODE 1SS133T-72			
D756	8-719-911-19	DIODE 1SS133T-72			
D761	8-719-911-19	DIODE 1SS133T-72			
D762	8-719-911-19	DIODE 1SS133T-72			
D763	8-719-911-19	DIODE 1SS133T-72			
		< FERRITE BEAD >			
FB701	1-412-473-21	INDUCTOR	0UH		
FB702	1-412-473-21	INDUCTOR	0UH		
		< FILTER >			
FL701	1-517-984-11	INDICATOR TUBE, FLUORESCENT			

Ref. No.	Part No.	Description			Remarks	
		< IC >				
IC701	8-759-680-22	IC TMP88CS77AF-1A90				
IC702	8-749-011-05	IC GP1U28X (REMOTE SENSOR)				
IC703	8-759-663-65	IC M35501P				
IC704	8-759-083-77	IC BA3830F				
		< TRANSISTOR >				
Q601	8-729-900-80	TRANSISTOR	BA1A4M-TP			
Q602	8-729-900-80	TRANSISTOR	BA1A4M-TP			
Q603	8-729-900-80	TRANSISTOR	BA1A4M-TP			
Q663	8-729-900-80	TRANSISTOR	BA1A4M-TP			
Q664	8-729-900-80	TRANSISTOR	BA1A4M-TP			
Q665	8-729-900-80	TRANSISTOR	BA1A4M-TP			
Q690	8-729-119-78	TRANSISTOR	2SC2785TP-HFE			
Q691	8-729-140-04	TRANSISTOR	2SB1116-TP-LK			
Q692	8-729-140-04	TRANSISTOR	2SB1116-TP-LK			
		< RESISTOR >				
R600	1-249-429-11	CARBON	10K	5%	1/4W	
R601	1-249-410-11	CARBON	270	5%	1/4W	F
R602	1-249-411-11	CARBON	330	5%	1/4W	
R603	1-249-413-11	CARBON	470	5%	1/4W	F
R604	1-249-414-11	CARBON	560	5%	1/4W	F
R605	1-249-415-11	CARBON	680	5%	1/4W	F
R606	1-249-417-11	CARBON	1K	5%	1/4W	F
R607	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R620	1-249-429-11	CARBON	10K	5%	1/4W	
R621	1-249-410-11	CARBON	270	5%	1/4W	F
R622	1-249-411-11	CARBON	330	5%	1/4W	
R623	1-249-413-11	CARBON	470	5%	1/4W	F
R624	1-249-414-11	CARBON	560	5%	1/4W	F
R625	1-249-415-11	CARBON	680	5%	1/4W	F
R626	1-249-417-11	CARBON	1K	5%	1/4W	F
R627	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R640	1-249-429-11	CARBON	10K	5%	1/4W	
R655	1-249-429-11	CARBON	10K	5%	1/4W	
R656	1-249-429-11	CARBON	10K	5%	1/4W	
R671	1-249-414-11	CARBON	560	5%	1/4W	F
R672	1-249-414-11	CARBON	560	5%	1/4W	F
R673	1-249-409-11	CARBON	220	5%	1/4W	F
R674	1-249-409-11	CARBON	220	5%	1/4W	F
R693	1-249-437-11	CARBON	47K	5%	1/4W	
R695	1-249-417-11	CARBON	1K	5%	1/4W	F
R696	1-249-437-11	CARBON	47K	5%	1/4W	
R697	1-249-437-11	CARBON	47K	5%	1/4W	
R698	1-249-417-11	CARBON	1K	5%	1/4W	F
R701	1-247-903-00	CARBON	1M	5%	1/4W	
R702	1-249-401-11	CARBON	47	5%	1/4W	F
R703	1-249-401-11	CARBON	47	5%	1/4W	F
R704	1-249-429-11	CARBON	10K	5%	1/4W	
R705	1-249-429-11	CARBON	10K	5%	1/4W	
R706	1-249-429-11	CARBON	10K	5%	1/4W	
R707	1-249-429-11	CARBON	10K	5%	1/4W	
R708	1-249-429-11	CARBON	10K	5%	1/4W	
R709	1-249-429-11	CARBON	10K	5%	1/4W	
R710	1-249-429-11	CARBON	10K	5%	1/4W	
R711	1-247-807-31	CARBON	100	5%	1/4W	
R712	1-247-807-31	CARBON	100	5%	1/4W	

Ref. No.	Part No.	Description			Remarks	
R713	1-249-441-11	CARBON	100K	5%	1/4W	
R714	1-249-441-11	CARBON	100K	5%	1/4W	
R715	1-249-441-11	CARBON	100K	5%	1/4W	
R716	1-249-441-11	CARBON	100K	5%	1/4W	
R717	1-249-441-11	CARBON	100K	5%	1/4W	
R718	1-249-441-11	CARBON	100K	5%	1/4W	
R719	1-249-441-11	CARBON	100K	5%	1/4W	
R720	1-249-441-11	CARBON	100K	5%	1/4W	
R721	1-249-441-11	CARBON	100K	5%	1/4W	
R722	1-249-441-11	CARBON	100K	5%	1/4W	
R723	1-249-441-11	CARBON	100K	5%	1/4W	
R724	1-249-441-11	CARBON	100K	5%	1/4W	
R725	1-249-441-11	CARBON	100K	5%	1/4W	
R726	1-249-441-11	CARBON	100K	5%	1/4W	
R727	1-249-441-11	CARBON	100K	5%	1/4W	
R728	1-249-441-11	CARBON	100K	5%	1/4W	
R729	1-249-441-11	CARBON	100K	5%	1/4W	
R730	1-249-441-11	CARBON	100K	5%	1/4W	
R731	1-249-441-11	CARBON	100K	5%	1/4W	
R732	1-249-441-11	CARBON	100K	5%	1/4W	
R733	1-249-441-11	CARBON	100K	5%	1/4W	
R734	1-249-429-11	CARBON	10K	5%	1/4W	
R737	1-247-807-31	CARBON	100	5%	1/4W	
R750	1-249-429-11	CARBON	10K	5%	1/4W	
R755	1-249-417-11	CARBON	1K	5%	1/4W	F
R757	1-247-807-31	CARBON	100	5%	1/4W	
R758	1-247-807-31	CARBON	100	5%	1/4W	
R759	1-247-807-31	CARBON	100	5%	1/4W	
R762	1-249-435-11	CARBON	33K	5%	1/4W	
R763	1-247-895-00	CARBON	470K	5%	1/4W	
R764	1-247-893-11	CARBON	390K	5%	1/4W	
R765	1-247-893-11	CARBON	390K	5%	1/4W	
R766	1-249-441-11	CARBON	100K	5%	1/4W	
R767	1-249-441-11	CARBON	100K	5%	1/4W	
R768	1-249-429-11	CARBON	10K	5%	1/4W	
R769	1-249-440-11	CARBON	82K	5%	1/4W	
R770	1-249-417-11	CARBON	1K	5%	1/4W	F
R771	1-249-433-11	CARBON	22K	5%	1/4W	
R773	1-249-436-11	CARBON	39K	5%	1/4W	
R774	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R801	1-249-437-11	CARBON	47K	5%	1/4W	
R802	1-249-437-11	CARBON	47K	5%	1/4W	
R803	1-249-437-11	CARBON	47K	5%	1/4W	
R804	1-249-437-11	CARBON	47K	5%	1/4W	
R805	1-249-437-11	CARBON	47K	5%	1/4W	
R806	1-249-437-11	CARBON	47K	5%	1/4W	
R807	1-249-437-11	CARBON	47K	5%	1/4W	
R808	1-249-437-11	CARBON	47K	5%	1/4W	
R809	1-249-437-11	CARBON	47K	5%	1/4W	
R810	1-249-437-11	CARBON	47K	5%	1/4W	
R811	1-249-437-11	CARBON	47K	5%	1/4W	
R812	1-249-437-11	CARBON	47K	5%	1/4W	
R813	1-249-437-11	CARBON	47K	5%	1/4W	
R814	1-249-437-11	CARBON	47K	5%	1/4W	
R815	1-249-437-11	CARBON	47K	5%	1/4W	
R816	1-249-437-11	CARBON	47K	5%	1/4W	
R817	1-249-437-11	CARBON	47K	5%	1/4W	

Ref. No.	Part No.	Description			Remarks
		< SWITCH >			
S601	1-762-875-21	SWITCH, KEYBOARD (I/⏻)			
S602	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)			
S603	1-762-875-21	SWITCH, KEYBOARD (FUNCTION)			
S604	1-762-875-21	SWITCH, KEYBOARD (NEXT)			
S605	1-762-875-21	SWITCH, KEYBOARD (PREVIOUS)			
S606	1-762-875-21	SWITCH, KEYBOARD (SELECT)			
S621	1-762-875-21	SWITCH, KEYBOARD (RETURN)			
S622	1-762-875-21	SWITCH, KEYBOARD (CINEMA SPACE)			
S623	1-762-875-21	SWITCH, KEYBOARD (V-GROOVE)			
S624	1-762-875-21	SWITCH, KEYBOARD (MODE SELECT)			
S625	1-762-875-21	SWITCH, KEYBOARD (NAME EDIT/CHARACTER)			
S626	1-762-875-21	SWITCH, KEYBOARD (CLEAR)			
		< VIBRATOR >			
X701	1-781-312-11	VIBRATOR, CERAMIC (12.5MHz)			

****

	1-671-504-11	SENSOR BOARD ************			
		< CONNECTOR >			
CN708	1-506-481-11	PIN, CONNECTOR 2P			
		< DIODE >			
D704	8-719-055-84	DIODE GL528VS1			
		< RESISTOR >			
R711	1-249-415-11	CARBON	680	5%	1/4W F

****

	1-671-789-11	SENSOR 2 BOARD ***************			
	4-964-461-02	HOLDER(SENSOR)			
		< TRANSISTOR >			
Q703	8-729-926-31	PHOTO TRANSISTOR PT483F1			

****

	A-4473-383-A	SUB PANEL BOARD, COMPLETE **************************			
		< CAPACITOR >			
C619	1-162-294-31	CERAMIC	0.001uF	10%	50V
C771	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C772	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
		< DIODE >			
D605	8-719-058-64	DIODE SEL5823A-TP15 (SET UP MODE)			
D606	8-719-058-64	DIODE SEL5823A-TP15 (SOUND MODE)			
D609	8-719-058-03	DIODE SEL5423E-TP15 (TAPE B ▶)			
D610	8-719-058-03	DIODE SEL5423E-TP15 (TAPE B ◀)			
D611	8-719-058-03	DIODE SEL5423E-TP15 (TAPE A ▶)			
D612	8-719-058-03	DIODE SEL5423E-TP15 (TAPE A ◀)			
D613	8-719-058-04	DIODE SEL5223S-TP15 (MD REC/REC IT)			
D614	8-719-058-04	DIODE SEL5223S-TP15 (TAPE REC PAUSE/START)			
D617	8-719-058-64	DIODE SEL5823A-TP15 (GROOVE-EX)			
D618	8-719-058-64	DIODE SEL5823A-TP15 (GROOVE)			

Ref. No.	Part No.	Description	Remarks
D619	8-719-072-81	DIODE SELU5E23C-STP15 (MD INSERT BACK LIGHT)	
D651	8-719-056-13	DIODE SML79423C-TP15 (MD)	
D652	8-719-056-13	DIODE SML79423C-TP15 (CD)	
		< TRANSISTOR >	
Q605	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q607	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q609	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q611	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q613	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q617	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q651	8-729-900-80	TRANSISTOR BA1A4M-TP	
Q652	8-729-900-80	TRANSISTOR BA1A4M-TP	
		< EARTH >	
* EPT701	1-537-738-21	TERMINAL, EARTH	
		< RESISTOR >	
R608	1-249-420-11	CARBON 1.8K 5% 1/4W	F
R609	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R610	1-247-843-11	CARBON 3.3K 5% 1/4W	
R611	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R612	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R613	1-249-429-11	CARBON 10K 5% 1/4W	
R614	1-249-431-11	CARBON 15K 5% 1/4W	
R615	1-249-434-11	CARBON 27K 5% 1/4W	
R641	1-249-410-11	CARBON 270 5% 1/4W	F
R642	1-249-411-11	CARBON 330 5% 1/4W	
R643	1-249-413-11	CARBON 470 5% 1/4W	F
R644	1-249-414-11	CARBON 560 5% 1/4W	F
R645	1-249-415-11	CARBON 680 5% 1/4W	F
R646	1-249-417-11	CARBON 1K 5% 1/4W	F
R647	1-249-418-11	CARBON 1.2K 5% 1/4W	F
R648	1-249-420-11	CARBON 1.8K 5% 1/4W	F
R649	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R650	1-247-843-11	CARBON 3.3K 5% 1/4W	
R651	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R652	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R653	1-249-429-11	CARBON 10K 5% 1/4W	
R675	1-249-409-11	CARBON 220 5% 1/4W	F
R676	1-249-409-11	CARBON 220 5% 1/4W	F
R677	1-249-409-11	CARBON 220 5% 1/4W	F
R679	1-249-409-11	CARBON 220 5% 1/4W	F
R680	1-249-409-11	CARBON 220 5% 1/4W	F
R681	1-249-409-11	CARBON 220 5% 1/4W	F
R682	1-249-409-11	CARBON 220 5% 1/4W	F
R683	1-249-409-11	CARBON 220 5% 1/4W	F
R684	1-249-409-11	CARBON 220 5% 1/4W	F
R687	1-249-409-11	CARBON 220 5% 1/4W	F
R688	1-249-409-11	CARBON 220 5% 1/4W	F
R689	1-249-409-11	CARBON 220 5% 1/4W	F
R690	1-249-409-11	CARBON 220 5% 1/4W	F
R691	1-249-409-11	CARBON 220 5% 1/4W	F
R692	1-249-409-11	CARBON 220 5% 1/4W	F
R752	1-249-401-11	CARBON 47 5% 1/4W	F
R753	1-247-807-31	CARBON 100 5% 1/4W	
R754	1-247-807-31	CARBON 100 5% 1/4W	

Ref. No.	Part No.	Description	Remarks
		< SWITCH >	
S607	1-762-875-21	SWITCH, KEYBOARD (MD REC MODE)	
S608	1-762-875-21	SWITCH, KEYBOARD (MD REC/REC IT)	
S609	1-762-875-21	SWITCH, KEYBOARD (SYNC REC)	
S610	1-762-875-21	SWITCH, KEYBOARD (TAPE REC PAUSE/START)	
S612	1-762-875-21	SWITCH, KEYBOARD (HIGH SPEED CD-MD SYNC)	
S613	1-762-875-21	SWITCH, KEYBOARD (GROOVE-EX)	
S614	1-762-875-21	SWITCH, KEYBOARD (GROOVE)	
S641	1-762-875-21	SWITCH, KEYBOARD (TAPE A ◀)	
S642	1-762-875-21	SWITCH, KEYBOARD (TAPE A ▶)	
S643	1-762-875-21	SWITCH, KEYBOARD (TAPE B ◀)	
S644	1-762-875-21	SWITCH, KEYBOARD (TAPE B ▶)	
S645	1-762-875-21	SWITCH, KEYBOARD (■)	
S646	1-762-875-21	SWITCH, KEYBOARD (CD ▶II)	
S647	1-762-875-21	SWITCH, KEYBOARD (MD ▶II)	
S648	1-762-875-21	SWITCH, KEYBOARD (MD ⏏)	
S649	1-762-875-21	SWITCH, KEYBOARD (TUNING ▶▶)	
S650	1-762-875-21	SWITCH, KEYBOARD (TUNING ◀◀)	
S651	1-762-875-21	SWITCH, KEYBOARD (PRESET ▶▶I)	
S652	1-762-875-21	SWITCH, KEYBOARD (PRESET I◀◀)	
S653	1-762-875-21	SWITCH, KEYBOARD (TUNER/BAND)	
S701	1-772-502-11	CONTROLLER, JOY STICK (PUSH ENTER)	
S751	1-473-392-11	ENCODER, ROTARY (VOLUME)	

****

Ref. No.	Part No.	Description	Remarks
	1-676-975-11	TRANS BOARD ************	
	1-533-293-11	FUSE HOLDER	
		< CONNECTOR >	
CN911	1-564-321-00	PIN, CONNECTOR 2P	
* CN913	1-564-510-11	PLUG, CONNECTOR 7P	
* CN914	1-564-517-11	PLUG, CONNECTOR 2P	
		< FUSE >	
⚠F911	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) 4A/250V	
⚠F912	1-533-469-11	FUSE, GLASS TUBE (DIA. 5) 2.5A/250V	
⚠F913	1-533-468-11	FUSE, GLASS TUBE (DIA. 5) 2A/250V	
⚠F916	1-533-949-31	FUSE, CYLINDRICAL (TIME LUG) 8A/250V	
⚠F917	1-533-949-31	FUSE, CYLINDRICAL (TIME LUG) 8A/250V	
⚠F918	1-533-470-11	FUSE, GLASS TUBE (DIA. 5) 3.15A/250V	
⚠F919	1-533-470-11	FUSE, GLASS TUBE (DIA. 5) 3.15A/250V	
		< RESISTOR >	
⚠R913	1-219-119-81	FUSIBLE 0.1 5% 1/4W	
⚠R917	1-219-123-11	FUSIBLE 0.47 5% 1/4W	
⚠R936	1-216-349-00	METAL OXIDE 1 5% 1W	
		< SWITCH >	
⚠S911	1-771-291-11	SWITCH, POWER (VOLTAGE SELECTOR)	
		< TRANSFORMER >	
⚠T901	1-435-774-11	TRANSFORMER, POWER	

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VIDEO

Ref. No.	Part No.	Description			Remarks
	A-4725-333-A	VIDEO BOARD, COMPLETE **********************			
		< CAPACITOR >			
C101	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C102	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C103	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C201	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C202	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C203	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C304	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C305	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C306	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C307	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C308	1-163-263-11	CERAMIC CHIP	330PF	5.00%	50V
C309	1-163-263-11	CERAMIC CHIP	330PF	5.00%	50V
C310	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C311	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C312	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C313	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V
C314	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C315	1-163-255-11	CERAMIC CHIP	150PF	5.00%	50V
C316	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C317	1-126-193-11	ELECT	1uF	20%	50V
C318	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C319	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C320	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C321	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C322	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C323	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C324	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C325	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C401	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C402	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C504	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C505	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C506	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C507	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C508	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C509	1-163-275-11	CERAMIC CHIP	0.001uF	5.00%	50V
C510	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C531	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C532	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C535	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C536	1-126-193-11	ELECT	1uF	20%	50V
C537	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C539	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C540	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C541	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C542	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C543	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C544	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C545	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C546	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C547	1-126-193-11	ELECT	1uF	20%	50V
C548	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C549	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C550	1-163-275-11	CERAMIC CHIP	0.001uF	5.00%	50V
C551	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C552	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C553	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C555	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C556	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C559	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C560	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C561	1-163-089-00	CERAMIC CHIP	6PF		50V
C562	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C563	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C564	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C565	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C566	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C568	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C569	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C570	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C571	1-128-065-11	ELECT CHIP	68uF	20.00%	10V
C573	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C574	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C576	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C577	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
		< CONNECTOR >			
CN501	1-774-769-11	CONNECTOR, FFC/FPC 25P			
CN502	1-793-580-11	CONNECTOR,FFC (LIF(NON-Z1F))15P			
		< TRIMMER >			
CT503	1-141-539-11	CAP, ADJ 10PF			
		< DIODE >			
D501	8-719-422-12	DIODE UDZ-TE-17-3.9B			
		< IC >			
IC101	8-759-701-40	IC NJM2100M(TE2)			
IC301	8-759-530-30	IC TC74VHCU04FT(EL)			
IC302	8-759-662-94	IC NJM2255M(TE2)			
IC303	8-759-711-47	IC NJM2209M(TE2)			
IC304	8-759-662-95	IC BA7665FS-E2			
IC501	8-759-530-30	IC TC74VHCU04FT(EL)			
IC502	8-759-672-65	IC M30622MGA-A30FP			
IC504	8-759-530-30	IC TC74VHCU04FT(EL)			
IC505	8-759-535-48	IC CL680T-D1			
IC506	8-759-677-67	IC LC372100PM-K98-TLA			
IC507	8-759-342-01	IC MSM514260C-60JS			
IC509	8-759-535-62	IC PCM1727E-2/T2			
		< JACK >			
J301	1-537-943-11	TERMINAL, S (S VIDEO OUT)			
J302	1-774-227-11	JACK, PIN 1P (VIDEO OUT)			
		< JUMPER RESISTOR >			
JW101	1-216-295-11	SHORT	0		
JW201	1-216-295-11	SHORT	0		
JW301	1-216-295-11	SHORT	0		
JW302	1-216-025-11	RES-CHIP	100	5%	1/10W
JW304	1-216-295-11	SHORT	0		
JW413	1-216-295-11	SHORT	0		
JW504	1-216-295-11	SHORT	0		
JW505	1-216-295-11	SHORT	0		

Ref. No.	Part No.	Description			Remarks
		< COIL >			
L301	1-410-372-21	INDUCTOR	1.8uH		
L302	1-410-372-21	INDUCTOR	1.8uH		
L303	1-410-658-31	INDUCTOR CHIP	220uH		
L501	1-216-296-91	SHORT	0		
L502	1-216-296-91	SHORT	0		
L503	1-216-296-91	SHORT	0		
L504	1-410-375-11	INDUCTOR CHIP	3.3uH		
L505	1-216-296-91	SHORT	0		
L506	1-216-296-91	SHORT	0		
L507	1-216-296-91	SHORT	0		
L508	1-216-296-91	SHORT	0		
L509	1-216-296-91	SHORT	0		
L510	1-216-296-91	SHORT	0		
L511	1-469-145-21	FERRITE	0uH		
L512	1-469-145-21	FERRITE	0uH		
L513	1-469-145-21	FERRITE	0uH		
		< TRANSISTOR >			
Q501	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q502	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
Q531	8-729-140-75	TRANSISTOR	2SD999-T1-CLCK		
		< RESISTOR >			
R101	1-216-073-00	METAL CHIP	10K	5%	1/10W
R102	1-208-441-61	RES-CHIP	1.5K	2%	1/10W
R103	1-208-441-61	RES-CHIP	1.5K	2%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R202	1-208-441-61	RES-CHIP	1.5K	2%	1/10W
R203	1-208-441-61	RES-CHIP	1.5K	2%	1/10W
R302	1-216-624-11	METAL CHIP	75	0.5%	1/10W
R303	1-216-624-11	METAL CHIP	75	0.5%	1/10W
R306	1-216-624-11	METAL CHIP	75	0.5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R311	1-216-029-00	METAL CHIP	150	5%	1/10W
R312	1-216-073-00	METAL CHIP	10K	5%	1/10W
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W
R314	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R315	1-216-624-11	METAL CHIP	75	0.5%	1/10W
R316	1-216-022-00	METAL CHIP	75	5%	1/10W
R317	1-216-022-00	METAL CHIP	75	5%	1/10W
R318	1-216-295-11	SHORT	0		
R319	1-216-624-11	METAL CHIP	75	0.5%	1/10W
R320	1-216-295-11	SHORT	0		
R403	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R404	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R501	1-216-025-11	RES-CHIP	100	5%	1/10W
R502	1-216-025-11	RES-CHIP	100	5%	1/10W
R503	1-216-025-11	RES-CHIP	100	5%	1/10W
R504	1-216-025-11	RES-CHIP	100	5%	1/10W
R505	1-216-025-11	RES-CHIP	100	5%	1/10W
R506	1-216-025-11	RES-CHIP	100	5%	1/10W
R507	1-216-073-00	METAL CHIP	10K	5%	1/10W
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W
R517	1-216-073-00	METAL CHIP	10K	5%	1/10W
R518	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R519	1-216-025-11	RES-CHIP	100	5%	1/10W
R520	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W
R523	1-216-013-00	METAL CHIP	33	5%	1/10W
R530	1-216-025-11	RES-CHIP	100	5%	1/10W
R531	1-216-025-11	RES-CHIP	100	5%	1/10W
R532	1-216-295-11	SHORT	0		
R533	1-216-295-11	SHORT	0		
R534	1-216-073-00	METAL CHIP	10K	5%	1/10W
R535	1-216-073-00	METAL CHIP	10K	5%	1/10W
R536	1-216-033-00	METAL CHIP	220	5%	1/10W
R537	1-216-025-11	RES-CHIP	100	5%	1/10W
R538	1-216-073-00	METAL CHIP	10K	5%	1/10W
R539	1-216-295-11	SHORT	0		
R540	1-216-295-11	SHORT	0		
R542	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R543	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R544	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R545	1-216-025-11	RES-CHIP	100	5%	1/10W
R546	1-216-049-11	RES-CHIP	1K	5%	1/10W
R548	1-216-049-11	RES-CHIP	1K	5%	1/10W
R549	1-216-025-11	RES-CHIP	100	5%	1/10W
R550	1-216-025-11	RES-CHIP	100	5%	1/10W
R551	1-216-025-11	RES-CHIP	100	5%	1/10W
R552	1-216-025-11	RES-CHIP	100	5%	1/10W
R554	1-216-025-11	RES-CHIP	100	5%	1/10W
R555	1-216-121-11	RES-CHIP	1M	5%	1/10W
R556	1-216-025-11	RES-CHIP	100	5%	1/10W
R557	1-216-025-11	RES-CHIP	100	5%	1/10W
R560	1-216-653-11	METAL CHIP	1.2K	0.5%	1/10W
R561	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R562	1-216-073-00	METAL CHIP	10K	5%	1/10W
R563	1-216-073-00	METAL CHIP	10K	5%	1/10W
R577	1-216-081-00	METAL CHIP	22K	5%	1/10W
R578	1-216-081-00	METAL CHIP	22K	5%	1/10W
R579	1-216-073-00	METAL CHIP	10K	5%	1/10W
R580	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VIBRATOR >			
X501	1-767-510-11	VIBRATOR, CERAMIC (10MHz)			
X503	1-767-519-11	VIBRATOR, CRYSTAL (27MHz)			

****

MISCELLANEOUS
****

3	1-693-482-41	TUNER (FM/AM)(HK,SP,MY)
3	1-693-508-41	TUNER (FM/AM)(JE)
4	1-769-972-11	WIRE(FLAT TYPE)(13 CORE)
8	1-775-151-11	WIRE(FLAT TYPE)(17 CORE)
9	1-775-236-11	WIRE(FLAT TYPE)(27 CORE)
15	1-773-217-11	WIRE (FLAT TYPE)(25 CORE)
64	1-769-938-11	WIRE (FLAT TYPE)(11 CORE)
102	1-757-088-11	WIRE (FLAT TYPE)(15 CORE)
103	1-773-042-11	WIRE (FLAT TYPE)(17 CORE)
105	1-773-020-11	WIRE (FLAT TYPE)(15 CORE)

Ref. No.	Part No.	Description	Remarks
⚠110	1-777-071-51	CORD, POWER (HK,SP,MY)	
⚠110	1-791-901-11	CORD, POWER (JE)	
112	1-500-386-11	FILTER, CLAMP (FERRITE CORE)	
176	1-471-061-11	MAGNET ASSY	
⚠238	8-820-122-01	OPTICAL PICK-UP KSM213DHAP/Z-NP	
239	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
457	1-678-514-11	FLEXIBLE BOARD	
⚠458	A-4672-541-A	OPTICAL PICK-UP KMS-260B/J1N	
HR901	1-500-670-12	HEAD, OVER LIGHT	
M1	X-3378-241-1	MOTOR ASSY (CAPSTAN)	
M101	A-4672-898-A	MOTOR ASSY, SPINDLE	
M102	A-4672-900-A	MOTOR ASSY, SLED	
M103	A-4672-975-A	MOTOR ASSY, LOADING (MD)	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY	
M702	X-4950-342-1	MOTOR (LOADING) ASSY (CD)	
M941	1-763-072-11	FAN, DC	
S102	1-771-957-11	SWITCH, PUSH (2 KEY)	
S707	1-418-045-01	ENCODER, ROTARY (DISC TRAY ADDRESS DET.)	
FL701	1-517-984-11	INDICATOR TUBE, FLUORESCENT	

****

Ref. No.	Part No.	Description	Remarks
		**************	
		HARDWARE LIST	
		**************	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-872-09	SCREW +BVTT 3X8 (S)	
#4	7-685-881-09	SCREW +BVTT 4X8 (S)	
#5	7-685-650-79	SCREW +BVTP 3X16 TYPE2 N-S	
#6	7-628-254-05	SCREW +PS 2.6X5	
#7	7-685-146-11	SCREW +P 3X8 TYPE2 NON-SLIT	
#8	7-685-850-04	SCREW +BVTT 2X3 (S)	
#9	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Sony Corporation
Audio Entertainment Group

2000I16050-1D
Printed in Japan ©2000.9
Published by General Engineering Dept.

SS-VZ50MD/ZX10/ZX30AV/ZX50MD/ZX70DVD

SERVICE MANUAL

US Model
SS-ZX10/ZX50MD/ZX70DVD

Canadian Model
SS-ZX10/ZX30AV/ZX70DVD

AEP Model
UK Model
SS-ZX10/ZX30AV/ZX50MD/ZX70DVD

E Model
SS-VZ50MD/ZX50MD

Australian Model
SS-ZX30AV/ZX50MD

Tourist Model
SS-VZ50MD

This set is the speaker system in
MHC-ZX10/ZX30AV/ZX70DVD,
DHC-VZ50MD/ZX50MD.

Photo: SS-ZX10

SPECIFICATIONS

Speaker system	3-way, bass-reflex type, magnetically shielded type
Speaker units	
Woofer:	17 cm, cone type
Tweeter:	5 cm, cone type
Super Tweeter:	4 cm, cone type
Nominal impedance	8 ohms
Dimensions (w/h/d)	Approx. 250 x 375 x 285 mm
Mass	Approx. 5.5 kg net per speaker

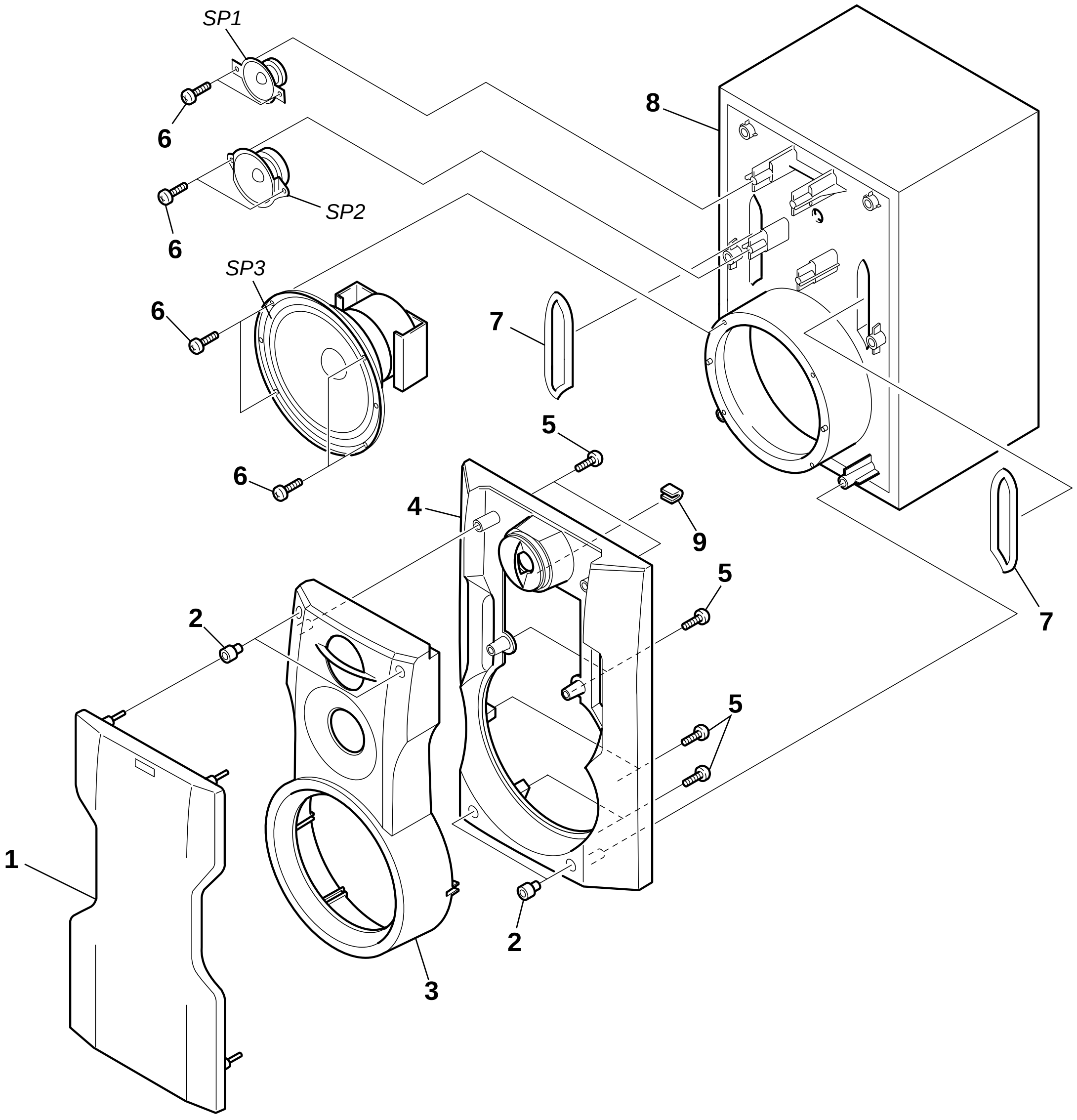
SPEAKER SYSTEM

SONY®

EXPLODED VIEW AND PARTS LIST

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation
  G : German model
  AED : North European model



Ref. No.	Part No.	Description	Remark
1	A-4412-073-A	FRAME ASSY, GRILLE	
2	4-963-075-01	CATCH	
3	4-227-595-01	PANEL, ORNAMENTAL	
4	4-227-594-01	PANEL, FRONT	
5	7-685-162-01	SCREW +B 4X14, TAPPING	
6	4-874-614-01	SCREW (4) (3.5X14), TAPPING	
7	4-227-663-01	PACKING	
8	A-4412-154-A	CABINET ASSY, SPEAKER	
9	4-229-552-01	PACKING (TW)	
SP1	1-529-663-11	SPEAKER (4cm)	
SP2	1-529-665-11	SPEAKER (5cm)	
SP3	1-529-664-11	SPEAKER (ZX10,ZX50MD)	
SP3	1-529-668-11	SPEAKER (VZ50MD,ZX30AV,ZX70DVD)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-558-848-11	CORD, SPEAKER	

9-929-242-11

Sony Corporation
Audio Entertainment Group

2000D091685-1
Printed in Japan © 2000. 04
Published by HA Quality Assurance Dept.